

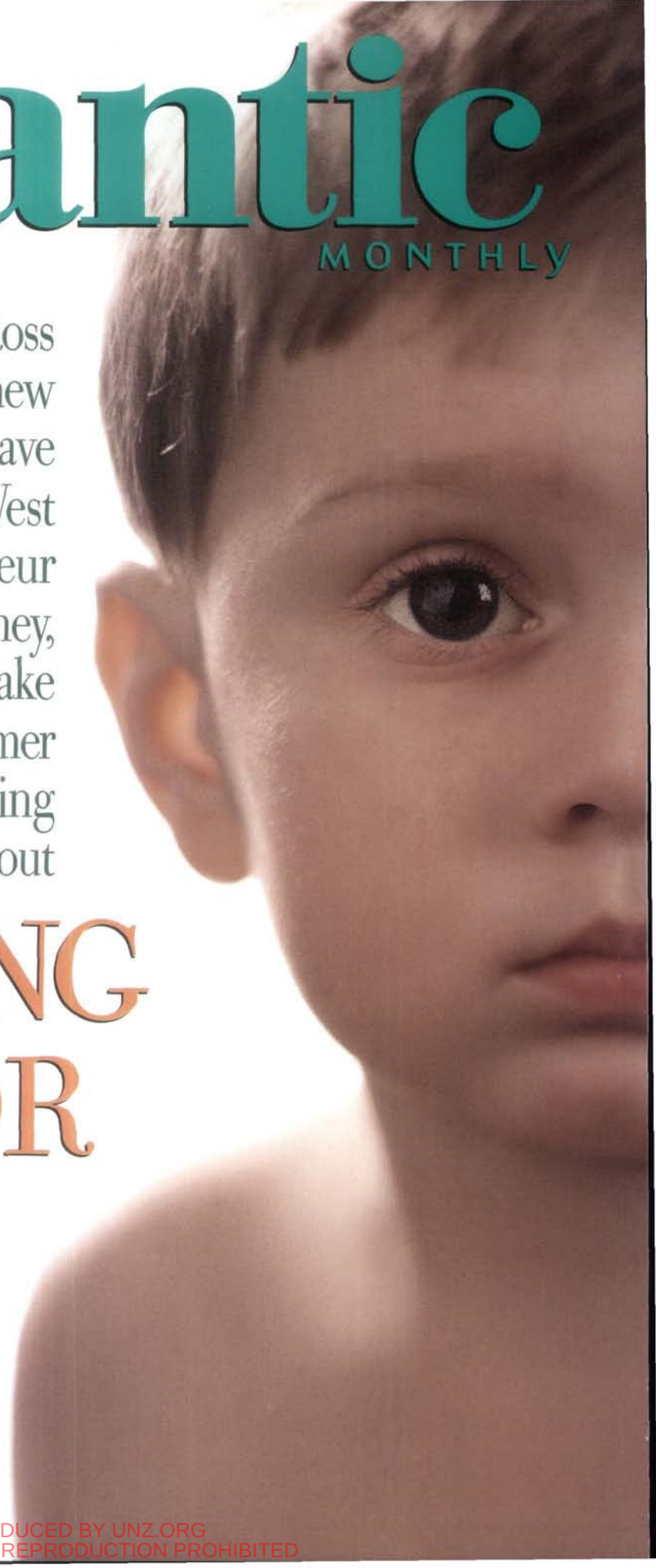
THE Atlantic

JUNE 2002 MONTHLY

Adrienne and Ben Ross are exploring radical new therapies that might save their son's life. Michael West is a biotech entrepreneur desperate to raise money, move Congress, and make history. One day last summer they met—and began talking very seriously about

CLONING TREVOR

BY KYLA DUNN



THE FINISH LINE?



THE STARTING POINT?



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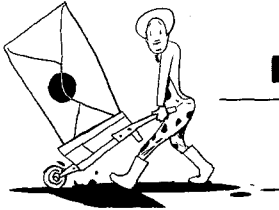
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LETTERS TO THE EDITOR

Murderous Kids

Ron Powers ("The Apocalypse of Adolescence," *March Atlantic*) paints an apocalyptic image of "murderous" youth in Vermont. But annualized crime data collected by the Justice Department paint a very different picture: In Vermont, New Hampshire, and Maine an average of six juveniles were arrested every year for murder in the 1970s, five in the 1980s, four in the 1990s, and two in 2000. In 2000 Vermont's 37,000 youths aged fourteen to seventeen accounted for just one homicide, and thirty-three violent crimes, in the entire state.

The inference that random crimes, occurring over half a decade, are somehow evidence of an apocalypse is about as valid as the claim that Timothy McVeigh and Charles Manson are indicative of their adult generations' predisposition to murder.

Jason Ziedenberg
The Justice Policy Institute
Washington, D.C.

I found Ron Powers's article disturbing in both its content and its claims. Although Powers confirmed my suspicions with his careful documentation of the precipitous rise in intensely violent crimes committed by adolescents in Vermont, he concluded—speciously, I think—that Vermont's adolescent criminals "are us."

Every teenager experiences precarious periods of suspended moral reasoning as he or she negotiates what the eminent social psychologist Lawrence Kohlberg mapped out as the "six stages of cognitive development." But what kept Robert Tulloch's and James Parker's classmates from acting out in the same way they did? Why don't the poorer, more oppressed Vermont kids who aren't presidents of their student councils, as Tulloch was,

or aspiring young artists and musicians, as Parker was, commit similar crimes? How can Powers claim one moment that Vermont is abandoning its youth by banning skateboarding in its parks and then report the next that a young criminal like Laird Stanard, who murdered his mother, received nurturing adult attention from her in the form of warm, cigarette-sharing talks about life? Perhaps Powers comes closest to an explanation for the egregious rash of recent juvenile crimes in Vermont when he quotes a segment of a letter from Theo Padnos, the unorthodox jailhouse teacher whom he romanticizes in the article. Trying to explain why Laird Stanard shot his mother, Padnos quotes "the shrink" assigned to the case: "I don't have any idea what the reason is, you know? Who knows?"

Chard deNiord
Putney, Vt.

This article on murderous kids show that the primary disservice we do to them is to arm them. Laird Stanard's mother, in particular, would undoubtedly not be dead today if her son hadn't had the chance to shoot her in a moment of impulse. Jane Hubbard's story indicates that an attack is not the same as a killing—her attackers lost their nerve, and she survived. Ready access to guns elevates manageable family crises to tragedies; having guns around the house gives a child the idea that a gun may be used, no matter what "gun training" the parent may give. Guns are fetishistic icons promising power, vindication, and selfhood to those with little or no self-control. Americans have failed spectacularly to take responsibility for the harm an armed populace inflicts upon itself.

Jane Smiley
Carmel Valley, Calif.

Ron Powers is correct that policies favoring punishment over rehabilitation are not helpful. However, he is wrong to suggest, by his approving description of Theo Padnos's literature class, that providing an accepting environment in which young offenders can come together in groups will be of much value. The evidence indicates otherwise: cost-effective programs that reduce juvenile offending focus on ensuring that young people do not have contact with other at-risk or offending youth and that their home and school environments reinforce effective academic and social behavior while placing clear, consistent, but not harsh limits on undesirable behavior.

Anthony Biglan
Oregon Research Institute
Eugene, Oreg.

Ron Powers replies:

Jason Ziedenberg's reductive reading of my article amounts to a validation of Mark Twain's remark that "there are lies, damn lies, and statistics." His institute's own, highly selective "annualized crime data" have nothing to say about most of the issues I raised: a youth-gang efflorescence (aggressively curbed) in a state that had never before experienced youth gangs; a current heroin epidemic in a state where heroin, and attendant teenage prostitution, were virtually unknown two years ago; a 77 percent increase in the number of youthful jail inmates in a three-year period; a statewide eruption of public school bomb threats; a 50 percent increase in the number of school dropouts in the 1990s. Most damning: Mr. Ziedenberg's statistics are powerless to express the evolving quality (as distinct from quantity) of teen violence in Vermont. The crimes under examination were distinctive not for their volume but for their extremes of premeditated cruelty and thoroughness of preparation. In short, the inference that raw murder statistics are somehow evidence of adolescent tranquillity is about as valid as the claim that body counts

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in Vietnam predicted the outcome of that war.

Chard deNiord seems inclined toward the Manichean view that there are good folks and there are bad folks in this world, and trying to figure out who's which is a waste of time. I respectfully feel otherwise. I would hardly dissent from Jane Smiley's observation that our national love affair with firearms has grievously increased the toll of juvenile slaughter; but this doesn't account for the rising extremes of juvenile alienation—evinced, for example, by Robert Tulloch and Jimmy Parker's choice of SOG Seal 2000 combat knives as weapons in their assault. Similarly, I can't find reason to dispute Anthony Biglan's argument for keeping young "offenders" sequestered from one another. My article was intended partly as an impetus toward a first step in such a process—namely, to reduce our national denial that far too many of our children have grown angry and withdrawn in the face of a spreading blankness in their lives.

1491

Charles C. Mann ("1491," March *Atlantic*) compellingly describes the melting of barriers between ecology and the study of human history and prehistory that is leading to a groundshift in the way we conceive of our relationship with ecosystems. He is also dead on when he asserts that this new knowledge is shaking the foundations of the conservation world. However, when Mann says that ecologists have "vigorously attacked" the view that the first European observers in the New World were not looking at wilderness, he misses the mark by a wide margin. In fact ecologists have been leading the charge to revise notions of ecosystem integrity.

The same science that has produced revelations about the impact of prehistorical human societies is also showing us how much more quickly the earth has been changing in the recent past. Careful consideration of major environmental issues shows that it is the rates of change and the sizes of effects, not the fact of their existence, that lie at the core of debates over what to do. Societies will have to face the same decisions they have always had to face. Fortunately, as the human population grows, so does understanding of our influence over the rest of the living

world. Unfortunately, turning the earth into a "garden" for 10 billion people is not likely to satisfy anyone's notion of successful environmental conservation.

David Skelly
Associate Professor of Ecology
Yale University
New Haven, Conn.

I take issue with two rather minor points in Charles Mann's article about pre-Columbian America.

First, Mann uses the example of the Pacific Northwest as an instance of disease creating depopulation, but he is incorrect that "the British navigator George Vancouver led the first European expedition to survey Puget Sound." The Spanish had been quite active on the Northwest coast, as marked by the first in-depth exploration carried out by Don Juan Francisco Bodega y Quadra, in 1775. Furthermore, actual penetration of the Strait of Juan de Fuca and into Puget Sound is reported in Manuel Quimper's explorations of 1790. Although Vancouver did carry out a detailed survey, he was far from the first European in the region, or even into Puget Sound.

Second, Mann (citing Elizabeth Fenn) uses Vancouver's reports as evidence of a "continental pandemic" spreading from Boston in 1774. By the time of Vancouver's survey, in 1792, more than 110 vessels (mostly of Spanish or British origin) had visited the Northwest coast—a more immediate contact point for the spread of disease, which likely occurred in successive waves. A secondary source of contagion is suggested by Spanish colonial activity in the Californias and Russian trade activity in the Aleutians.

Jon D. Carlson
Arizona State University
Tempe, Ariz.

On one crucial point I found "1491" confusing, perhaps even contradictory. On page 43 the author says, "Before Columbus, Dobyns calculated, the Western Hemisphere held ninety to 112 million people." On page 44 he says that Dobyns revised these numbers upward in a 1983 book. But on page 46 he tells us that Dobyns's current estimate is 18 million.

Peter Hylton
Chicago, Ill.

Charles C. Mann replies:

As David Skelly says, some ecologists "have been leading the charge to revise notions of ecosystem integrity." But others, including some prominent members of the field, have fought against it vigorously. It is to them I was referring. In response to Jon Carlson's fascinating letter, I must disagree. Yes, other Europeans went into the Northwest before Vancouver, but he was the first to collect the data for a detailed map of the area, which is what I said. Although my article was merely quoting Elizabeth Fenn on the smallpox, let me venture the suggestion that previous European visits are implausible sources for the disease. The infection would have burned itself out in the crew long before their arrival, so the vessels would have had to pick up some extra sick people on these shores to act as agents of transmission—a possible but not likely scenario. Finally, I am sorry to have confused Peter Hylton. Dobyns's most recent estimate for North America's population in 1491 is 18 million; the other numbers refer to the entire Western Hemisphere.

Women of God

As I read Mary Gordon's "Women of God" (January *Atlantic*), I kept asking myself, "Why in the world would any woman want to join one of the 'progressive' orders?" As far as I can tell from the article, the nuns in these orders prefer feminism over the faith. Perhaps that's why the orders are dying—what's so beautiful or holy or moving or even different about secular liberalism? Progressive orders offer nothing spiritually unique for women, so why bother?

Gordon never raises the possibility that the run-of-the-mill feminism she celebrates is killing some of the orders—that Vatican II, rather than saving orders, is drying them up. Conversely, she fails to consider that perhaps the traditional orders are thriving because they dip the nuns in something truly revolutionary and truly different: the faith once delivered to the saints.

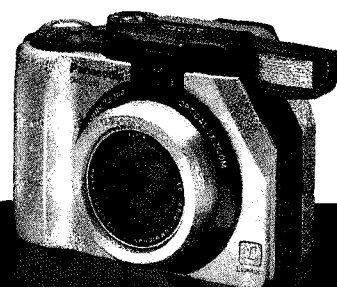
H. Bowen Woodruff
Cambridge, Mass.

I wish to make several clarifications in the case, mentioned in Mary Gordon's "Women of God," that involved my presiding over the distribution of abortion funds

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as director of the Michigan Department of Social Services. Gordon describes Sister Sharon Holland as saying, "Dialogue and productive communication goes on between representatives of the Vatican and superiors of religious orders before any action is taken. And the action then takes place under the guidance of the superiors." In my case this was not true.

My superiors were bypassed completely. I received a letter directing me to meet with a delegate of the Holy See, selected by the Sacred Congregation for Religious. The letter said that if I wished, I could bring two sisters from my province. My religious superiors were never mentioned. I selected Helen Marie Burns, RSM, Detroit Provincial, and Emily George, RSM, Vice-President, Sisters of Mercy of the Union. At the meeting I was informed that I was to resign my position immediately or be subjected to a canonical process leading to dismissal from the Sisters of Mercy. These alternatives placed me in an untenable position, since I had accepted the governor's appointment in good faith and with the understanding that all necessary approvals had been granted. The dispensation from perpetual vows as a Sister of Mercy was requested with deep regret, sorrow, and limited freedom. But I do believe that the Vatican and religious congregations learned (and continue to learn) from this experience how better to handle such cases.

*Agnes Mary Mansour
Farmington Hills, Mich.*

Jihad

In his review of *Jihad*, by Gilles Kepel (March *Atlantic*), Walter Laqueur lamented that there might not be any copies of Eberhard Serauky's book, *Im Namen Allahs*, in the United States. The Online Computer Library Center's database turns up copies at the University of Arizona, Duke University, the New York Public Library, and Yeshiva University.

*Dale Walker
Chicago, Ill.*

Walter Laqueur refers to the Afghan mob attack on Robert Fisk and gives the reader the impression that the attack was linked to Fisk's antiwar opin-

ions. In fact the mob was angry over American bombing of their villages, and took that anger out on a handy Westerner.

*Donald Johnson
Nyack, N.Y.*

Advice & Consent

Sheldon Lee Glashow (Letters, April *Atlantic*) accuses Americans of widely misapplying New Jersey as their size standard for world geography. He chides *The New York Times* and *The Washington Post* for not studying their maps more carefully, citing their inaccurate comparisons of New Jersey with Swaziland (the *Times* said about the same size) and the Netherlands (the *Post* said about twice the size). Wrong, says Mr. Glashow—Swaziland is more than twice the size of New Jersey, and the Netherlands more than five times as large. Who's right? The journalists, says *The World Almanac* of 2001, which lists New Jersey's land area as 7,419 square miles, Swaziland's as 6,700, and the Netherlands' as 16,033.

*Roy M. Gulick
Green Cove Springs, Fla.*

Jack Beatty's article "Do As We Say, Not As We Do" (February *Atlantic*) uses too broad a brush to criticize wealthy countries for closing their markets to Third World imports. Many such countries may indeed be guilty as charged, but the United States is not one of them.

As the latest U.S. government figures show, over the past decade U.S. imports of Third World goods rose nearly twice as fast as U.S. imports of wealthy countries' products. U.S. imports of Third World manufactured goods—which create the most wealth for Third World countries—rose more than twice as fast as U.S. imports of wealthy countries' manufactures. In fact, fully 47.7 percent of all U.S. manufactured imports now come from developing countries, up from 36.4 percent in 1991.

International Monetary Fund figures, moreover, demonstrate just how open America's market is compared with those of peer countries. According to the Fund economists Vivek Arora and Athanasios Vamvakides, because the U.S. market is so open to Third World imports, every

unit of U.S. economic growth is statistically associated with the same unit of Third World growth. Japanese and European markets, by contrast, are so closed that their growth shows no statistically significant correlation with Third World growth at all.

The United States clearly deserves not criticism from developing countries and their advocates but praise for its Third World trade policies—the more so because extensive imports from developing countries have taken millions of valuable industrial jobs from the nation's middle class and working poor. If Third World governments and their supporters really care about promoting economic development, they'll focus their indignation on the real trade tightwads—and on the homegrown corruption and official brutality that so pervades these lands.

*Alan Tonelson
U.S. Business and Industry Council
Educational Foundation
Washington, D.C.*

Jack Beatty replies:

In my column I mentioned that the Bush Administration had dangled before General Musharraf, the Pakistani President, the prospect that we would accept more textile imports from Pakistan as part of a quid pro quo for Pakistan's help in the war in Afghanistan. I said the Carolina textile lobby had not been consulted on this implied promise. It has since lobbied the Administration to abandon it. This may be good domestic politics, but it is no help in the war on terror. At the Monterrey conference in March, President Bush linked terror to poverty, as I did in my column, saying that the war on terror can't succeed without an accompanying Western effort to raise living standards in the poor countries. That logic by and large went out the window with Pakistan, which one would have thought had a stronger claim on our help than any other country and which in this case did not want aid, only freer trade. I repeat one statistic from the Oxfam report: our trade barriers on textile and other products cost the least developed countries more than they receive from us in aid.

Correction:

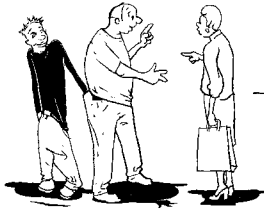
The May *Palate at Large* gave the wrong phone number for the Colvin Run Tavern, in Tysons Corner, Virginia. The correct phone number is 703-356-9500. We regret the error.

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INNOCENT BYSTANDER

by CULLEN MURPHY

THE GREAT IN-BETWEEN

*Theologians have revised
our notions of heaven and hell.
But one other destination
deserves attention*

.....

Carl Hiaasen, in his novels about criminal and cultural mayhem in Florida, offers frequent observations about the physical character and emotional register of American life. The observations are often casual, even fleeting. In Hiaasen's latest book, *Basket Case*, the narrator at one point says, "From the pancake house I drove directly to the county morgue. The contrast in ambience is not especially striking."

We all know what he means. The communal spaces of the built American environment have undergone a great convergence. Go back a hundred or two hundred years and these various spaces—tavern, courthouse, church, hospital, shop—seem palpably distinct in feeling. Go to the equivalent places now and you will be in the grasp of a single sensibility. The atrium of a Hyatt, the reception area of a law firm, the meeting annex of a church, the viewing parlor at a funeral home—locales such as these have become nearly indistinguishable. The colors and carpeting, the plant life and artwork, all seem to derive from common templates. If there's music, it's the bittersweet sax and candyland jazz that leach from recessed speakers everywhere.

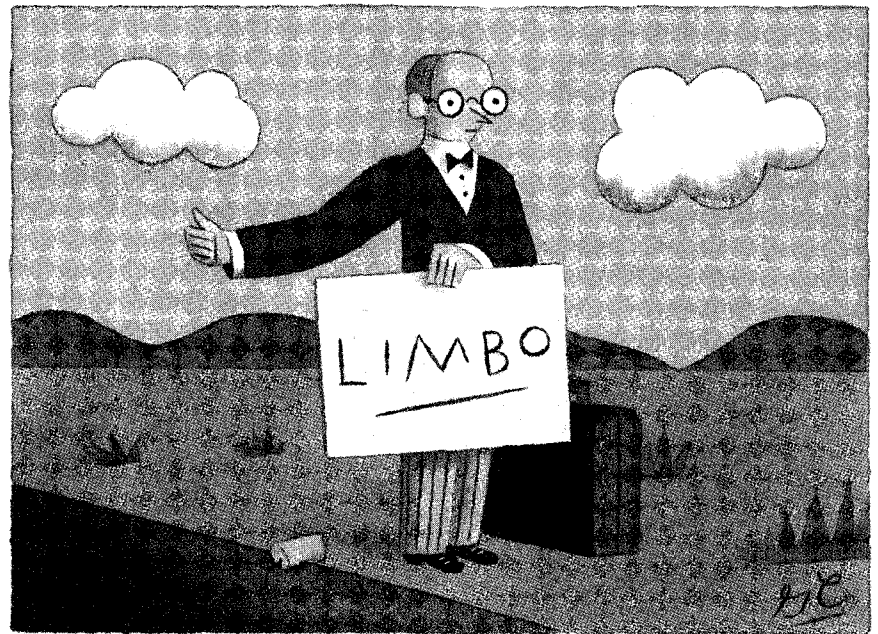
These locales have one other thing in common. They are places where we mark time, cool our heels, hold our horses, keep our shirts on, and otherwise negotiate the transitions between episodes of productive activity. They are the physical embodiment of the state known as limbo—the most prevalent condition of modern life.

In traditional Western conceptions of the afterlife the Big Three permanent destinations have long been heaven, hell, and limbo (purgatory was merely an unpleasantness for transients, the afterlife's O'Hare), with most of the attention being devoted to heaven and hell. In recent years religious leaders have done a significant amount of new thinking about both these places.

Pope John Paul II, for instance, has stated that heaven is not a "physical place among the clouds." The Catholic theologian Richard McBrien, drawing

ship suggests that this expectation is the result of a serious mistranslation that occurred in antiquity, and that "virgins" should actually read "white raisins" of crystal clarity."

Hell, too, has undergone a metamorphosis. A couple of years ago the cover of *Christianity Today*, a prominent evangelical magazine, posed the question "Hell: Annihilation or Eternal Torment?" This may not sound like much of a choice, but the annihilationist view of hell (damnation as nonexistence) actually represents a moderating



on developments in the natural sciences, has observed, "We are no longer forced to choose between believing either that heaven is a city in the sky somewhere or that it doesn't exist at all. Now we can think of heaven as an alternate state, perhaps as another dimension." Revisionism about heaven may soon extend to Muslims. Islamic martyrs, according to a famous passage in the Koran, can expect a heavenly reward in the form of plenteous virgins. According to an article in *The New York Times*, new scholar-

of the traditional Jonathan Edwards view ("The pit is prepared. The fire is made ready"). The Church of England has formally abandoned the notion of hell as a fiery domain, and so have most Catholic theologians, who along with liberal Protestants now tend to see hell as a state in which "a person suffers from the deprivation of God."

And then there is limbo. The concept of limbo first gained wide appeal in early Christian times, as a humane response to a perceived theological in-

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justice. If entry into heaven required baptism, as Christian doctrine stated, then what fate awaited the souls of innocent people who missed out on baptism through no fault of their own? What about infants who died before baptism? What about virtuous folk outside the Christian world, or anyone who lived before the advent of Christianity—including revered figures among the Israelites, such as Abraham and Moses? Was hell the only option?

The solution was limbo, a neutral holding pen where souls would experience neither the ecstatic transports of the elect nor the grinding punishments of the damned. Christian theologians began exploring the idea in the Middle Ages. In the thirteenth century it was endorsed by Thomas Aquinas. Dante, in *The Divine Comedy*, gave it a humanistic expansion, populating his limbo not only with luminaries from the Hebrew Bible but also with worthy pagans (Socrates, Plato, Aeneas, Brutus) and, surprisingly, a number of prominent Muslims (the philosophers Avicenna and Averroës; the warrior Saladin, scourge of the Crusaders). And limbo enjoyed wide support from ordinary people, for whom it represented a kind of plea bargain with God.

As it happens, limbo was never accepted by the Church in any official pronouncement. And in recent years the need for limbo has been obviated by a relaxation of the entry standards for heaven. A merciful Creator, it is said, would never condemn an innocent soul on the basis of legal technicalities. As an afterlifestyle option, heaven is now available to everyone.

And yet limbo has not disappeared. "Science is the record of dead religions," Oscar Wilde once wrote; religious imaginings often get a second wind as mundane phenomena. Limbo's profile in the next world may have diminished, but its stature in the present world has waxed correspondingly. Consider the ubiquity of "limbo" in popular discourse. "We're all in limbo," George W. Bush announced during the standoff in Florida with Al Gore. In the aftermath of last year's terrorist attacks, an editorial writer for *The Providence Journal* declared American consumers

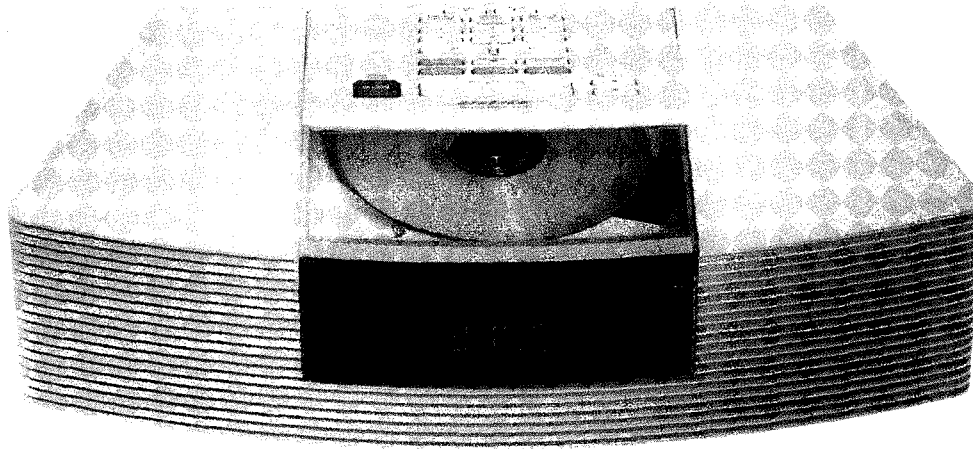
to be in a state of "semi-wartime limbo." An Iranian national on French soil, snared in a web of immigration peculiarities, has been "in legal limbo" in Terminal One of Charles de Gaulle Airport for thirteen years. The Canadian poet Irving Clayton has declared that his whole country represents the physical embodiment of limbo. (Hell, he adds, is embodied by the country immediately to the south.) The entire Mormon Tabernacle Choir lip-synched its way through the Winter Olympics—for its members as public an experience of limbo as one can imagine. There may be no concept of limbo in Islam, but one suspects that the al Qaeda terrorists imprisoned at Guantánamo Bay will soon come to the idea on their own.

Limbo is not merely a figure of speech. Think of the sheer amount of waiting—the sheer amount of "being there"—we all must endure. Woody Allen famously remarked that 80 percent of success is just showing up, but most of what happens after showing up amounts to limbo. Actually, Allen's estimate is high—it ignores all the time spent in the limbo of in-between. In days of yore the average person did a lot of staying put. "Happy the man whose wish and care / A few paternal acres bound," wrote Alexander Pope, echoing the earlier sentiments of Horace. Today our lives count down between floors in elevators, between stops in cars, between flights at airports. Telephone time spent on hold is an increasingly non-trivial component of ordinary life. Some biologists even argue that our entire species should be considered "on hold," because cultural and technological advances have vitiated natural selection. Meanwhile, technology brings new categories of limbo into being, with frozen embryos, Internet chat rooms, "media timeouts" during basketball games.

Utopian visionaries have wondered for centuries how we might bring about heaven on earth. Their dystopian counterparts have worried that we would instead create a hell on earth. Now comes a Third Way. Who rules this limbo of the quick? I am no theologian, but to judge from the music, it might well be Kenny G. ■

Cullen Murphy is *The Atlantic's* managing editor.

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THE AGENDA

ESSAYS THIS MONTH on how suicide bombing became the Palestinian tactic of choice, why universities look more and more like businesses, and what failure has done for our country.

DAVID BROOKS

"Suicide bombing is the crack cocaine of warfare. It doesn't just inflict death and terror on its victims; it intoxicates the people who sponsor it. It isn't just a tactic in a larger war; it overwhelms the political goals it is meant to serve." PAGE 18

RICHARD A. POSNER

"The professionalization of the university is part of a broader trend, toward bringing an ever greater range of human activities under the direction of rational principles. Almost everything nowadays is 'rationalized'—businesslike, rule-bound, disenchanted."

PAGE 21

P. J. O'ROURKE

"By 2030 America is going to have a very large number of retirees living on Social Security. What will we do with all the old people? We may have to donate them overseas in the hope of aiding developing countries that lack age, wisdom, and bingo." PAGE 22

SIMON LAZARUS

"Nearly all mainstream legal experts were blindsided by Bush v. Gore. But the decision should not have come as a surprise. For several years now judicial conservatives have been marching to a new and very different drummer." PAGE 24

THE AMERICAN WAY OF WAR

The third of three essays on the revolution in air power

.....

The Gulf War was America's first serious war after Vietnam. It is tempting to think of this conflict largely as a land war. The principal public hero of the war was a land man, U.S. Army General "Stormin'" Norman Schwarzkopf. Some of the most conspicuous aspects of the Gulf War had to do with the so-called ground war: the largest invasion force gathered since World War II facing "the fourth largest army in the world" along the feared Saddam Line; the U.S. Army's VII Corps in its great wheeling assault on the Iraqi forces in Kuwait; the slaughter of retreating Iraqis on the "highway to hell."

This view of the war is misleading. A dry but accurate summary of what really happened may be found in the General Accounting Office's 1996 report "Operation Desert Storm: Evaluation of the Air War":

Operation Desert Storm was primarily a sustained 43-day air campaign by the United States and its allies against Iraq between January 17, 1991, and February 28, 1991. It was the first large employment of U.S. air power since the Vietnam war, and by some measures (particularly the low number of U.S. casualties and the short duration of the campaign), it was perhaps the most successful war fought by the United States in the 20th century. The main ground campaign occupied only the final 100 hours of the war.

Approximately 1,600 U.S. combat aircraft, supported by about 100,000 sailors, Marines, and pilots, took part in the Gulf War. These included thirty-year-old B-52 bombers; the Air Force's F-16 and the Navy's F/A-18; the F-117

stealth fighter; and A-10 Warthog close-air-support attack planes, plus ship- and air-launched cruise missiles. In some 42,000 strikes the allied planes dropped 88,500 tons of bombs on Iraq and on Iraqi targets in Kuwait. About 9,500 bombs were laser- and television-guided "smart" weapons, and about 162,000 were conventional "dumb" bombs.

COMMENT

MICHAEL KELLY

From the first the U.S. warplanes and cruise missiles were able to penetrate Iraqi air defenses with near impunity and to strike their targets with remarkable accuracy. The effect of this was terrible. "In the past, air forces fought through elaborate defenses and accepted losses on their way to the target or rolled those defenses back," Thomas A. Keaney and Eliot A. Cohen wrote in the Air Force's official analysis, *Gulf War Air Power Survey*. "In the Gulf War, the Coalition could strike Iraqi air defenses immediately, and they never recovered from these initial, stunning blows." The cruise missiles and the F-117 stealth fighters (which flew only two percent of the total attack sorties but hit nearly 40 percent of the strategic targets) were especially terrifying: "These platforms were able to set the terms for air operations over Iraq and to bring the reality of the war home to the residents of Baghdad."

The accuracy of the bombing was extraordinary. As General Michael Dugan, a retired Air Force chief of staff, wrote, the F-16 and F/A-18 fighters were able to place 50 percent of their bombs within thirty feet of their aim points; but "even 30-foot accuracy is no longer interesting." The smart bombs routinely hit within three feet of their

ILLUSTRATIONS BY JOHN CUNEO

targets. Desert Storm, Dugan wrote, “was a vindication of the old concept of precision bombing; the technology finally caught up with the doctrine.”

And the new American air power delivered, finally, on the old dream of a relatively bloodless victory. Counting casualties in both the air war and the ground war, the U.S. forces lost 146 lives in combat. Only thirty-eight allied warplanes were lost, and only fifteen American tanks. Moreover, and more incredibly, air power delivered this wildly lopsided victory in a fairly humane fashion. Estimates of Iraqi civilian deaths owing to bombing are still a matter of debate, but there is no question that, considering the huge number of bombs that were dropped, not that many noncombatants were killed.

In Operation Desert Storm the gen-

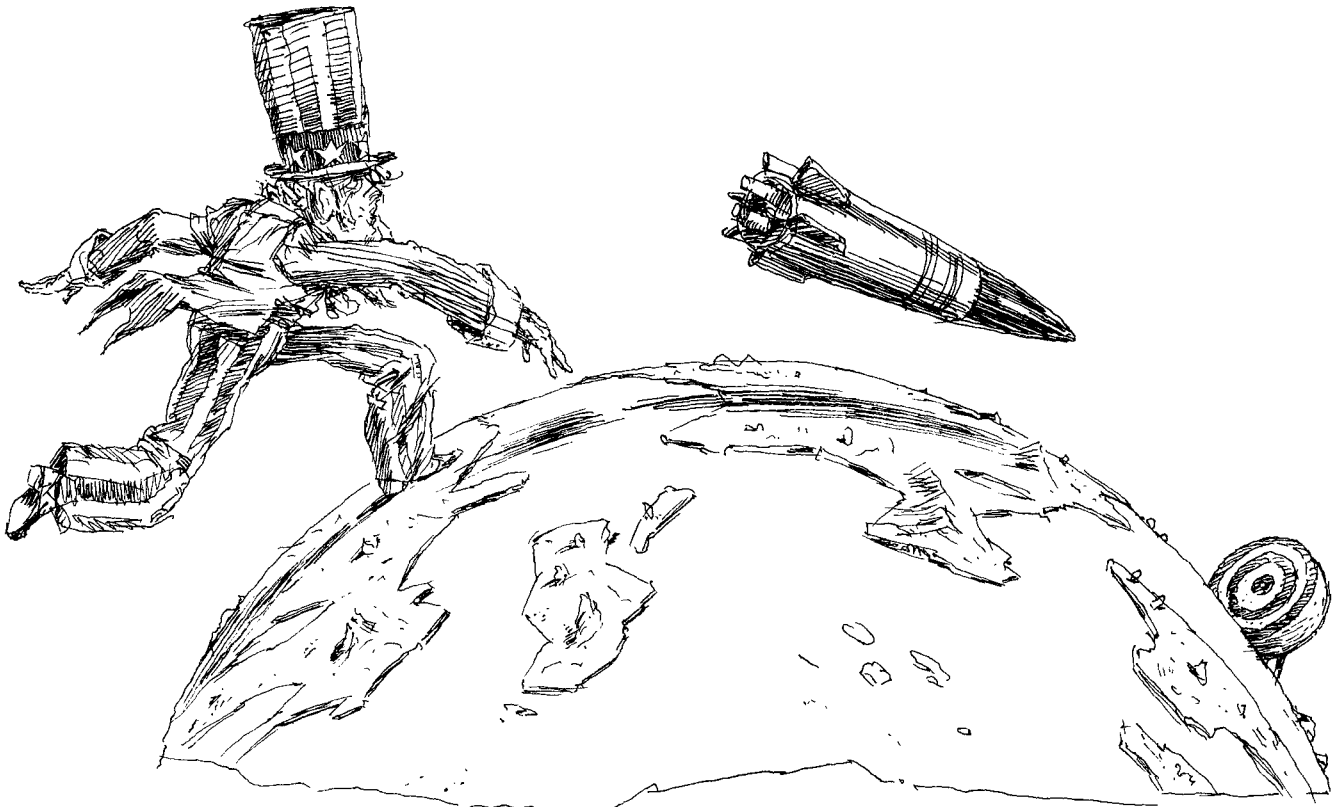
“ethnic cleansing” war against Bosnian Muslims. In eleven days of air strikes supported by Bosnian and Croat ground offensives, the U.S.-led warplanes of Operation Deliberate Force flew 3,515 sorties, attacking forty-eight target complexes with 1,026 bombs, 708 of them guided weapons and 318 unguided, plus twenty-three cruise missiles. The operation essentially destroyed the Serbs’ command-and-control structure; relatively few enemy civilians were killed. Almost immediately the Bosnian Serbs began negotiating, and within months they signed the cease-fire they had refused to contemplate for three years.

In the spring of 1999 a NATO coalition again went to war against the Serbs, in Operation Allied Force. This time they faced the main forces of Slobodan

sion-guided), including 329 cruise missiles against 490 fixed targets and 520 movable ones.

The campaign destroyed or severely damaged most of Yugoslavia’s industrial and communications infrastructure, wrecked its economy, destroyed a large measure of its armored assets, inflicted (by NATO’s estimate) 5,000 to 10,000 casualties, drove the Serb forces from Kosovo, and led to the toppling of Milosevic’s government. Only two allied planes were downed, and only thirty bombs caused civilian casualties, with about 500 civilians killed.

The campaign in Afghanistan followed the model of the previous three and advanced beyond them to achieve what *The Washington Post* reporter Thomas E. Ricks called “the new American way of war, one built around



erals fought not the last war but the next. The Gulf War was the template for the United States’ following three important military conflicts—the two Balkan campaigns and, most recently, the battle of Afghanistan.

In the summer of 1995 NATO launched a military offensive against the Bosnian Serb forces waging an

Milosevic’s Yugoslavia, in Kosovo. The attack was waged entirely by air, and employed 1,055 aircraft from fourteen nations, with U.S. warplanes handling up to 80 percent of the workload in 13,000 attack sorties over the course of a seventy-eight-day campaign. The allied planes delivered 23,000 bombs and missiles (of which 35 percent were preci-

weapons operating at extremely long ranges, hitting targets with unprecedented precision, and relying as never before on gigabytes of targeting information gathered on the ground, in the air, and from space.”

Since October 7 U.S. warplanes have flown 24,000 sorties over Afghanistan, delivering 22,000 bombs, mis-

siles, and other ordnance. In the Gulf War only five percent of the bombs dropped were precision-guided; in Afghanistan the equivalent figure was about 60 percent. "Precision" had become very close to ubiquitous, and was grafted on to weapons that once were (famously) imprecise. In Afghanistan the old B-52s that had carpet-bombed Vietnam were guided by satellite-fed data from ground troops to drop bombs in designated 1,000-yard-long areas. And precision became cheap. The chief instrument of precision in the Gulf War, the Tomahawk cruise missile, cost more than \$1 million apiece. In Afghanistan precision was most often supplied by the Joint Direct Attack Munition, an \$18,000 kit that uses a GPS system to convert a dumb bomb into a smart one. Of 6,650 JDAMs dropped in Afghanistan, the Air Force reports, less than 10 percent missed their targets.

The Taliban government of Afghanistan fell, in a few months, with only 4,000 U.S. troops on the ground, and with only seventeen American deaths. The independent Project on Defense Alternatives estimated the number of civilian bombing deaths at 1,000 to 1,300—higher than in Kosovo, but still remarkably low.

With its twelve nuclear aircraft-carrier battle groups (no other nation has anything even remotely comparable), its stealth bombers, its cruise missiles, its remarkable global guidance and communications systems (which allowed the war in Afghanistan to be run in real time, on the ground, from U.S. Central Command), its generations-ahead fleet of warplanes—with all this the United States stands alone in the world and in history.

No nation before has possessed any force like this; no other nation possesses any force like it now, or any force capable of sustained defense against it. "Nothing has ever existed like this disparity of power; nothing," the historian Paul Kennedy observed after the battle of Afghanistan. "One hears the distant rustle of military plans and feasibility studies by general staffs across the globe being torn up and dropped into the dustbin of history." ■

Michael Kelly is the editor of The Atlantic.

THE CULTURE OF MARTYRDOM

How suicide bombing became not just a means but an end

.....

Suicide bombing is the crack cocaine of warfare. It doesn't just inflict death and terror on its victims; it intoxicates the people who sponsor it. It unleashes the deepest and most addictive human passions—the thirst for vengeance, the desire for religious purity, the longing for earthly glory and eternal salvation. Suicide bombing isn't just a tactic in a larger war; it overwhelms the political goals it is meant to serve. It creates its own logic and transforms the culture of those who employ it. This is what has happened in the Arab-Israeli dispute. Over the past year suicide bombing has dramatically changed the nature of the conflict.

Before 1983 there were few suicide bombings. The Koran forbids the taking of one's own life, and this prohibition was still generally observed. But when the United States stationed Marines in Beirut, the leaders of the Islamic resistance movement Hizbollah began to discuss turning to this ultimate terrorist weapon. Religious authorities in Iran gave it their blessing, and a wave of suicide bombings began, starting with the attacks that killed about sixty U.S. embassy workers in April of 1983 and about 240 people in the Marine compound at the airport in October. The bombings proved so successful at driving the United States and, later, Israel out of Lebanon that most lingering religious concerns were set aside.

The tactic was introduced into Palestinian areas only gradually. In 1988 Fathi Shiqaqi, the founder of the Palestinian Islamic Jihad, wrote a set of guidelines (aimed at countering religious objections to the truck bombings of the 1980s) for the use of explosives in individual bombings; nevertheless, he characterized operations calling for martyrdom as "exceptional." But by the mid-1990s the group Hamas was using suicide bombers as a way of derailing the Oslo peace process. The assassination of the master Palestinian bomb maker Yahya Ayyash, presumably by

Israeli agents, in January of 1996, set off a series of suicide bombings in retaliation. Suicide bombings nonetheless remained relatively unusual until two years ago, after the Palestinian leader Yasir Arafat walked out of the peace conference at Camp David—a conference at which Israel's Prime Minister, Ehud Barak, had offered to return to the Palestinians parts of Jerusalem and almost all of the West Bank.

At that point the psychology shifted. We will not see peace soon, many Palestinians concluded, but when it eventually comes, we will get everything we want. We will endure, we will fight, and we will suffer for that final victory. From then on the struggle (at least from the Palestinian point of view) was no longer about negotiation and compromise—about who would get which piece of land, which road or river. The red passions of the bombers obliterated the grays of the peace process. Suicide bombing became the tactic of choice, even in circumstances where a terrorist could have planted a bomb and then escaped without injury. Martyrdom became not just a means but an end.

Suicide bombing is a highly communitarian enterprise. According to Ariel Merari, the director of the Political Violence Research Center, at Tel Aviv University, and a leading expert on the phenomenon, in not one instance has a lone, crazed Palestinian gotten hold of a bomb and gone off to kill Israelis. Suicide bombings are initiated by tightly run organizations that recruit, indoctrinate, train, and reward the bombers. Those organizations do not seek depressed or mentally unstable people for their missions. From 1996 to 1999 the Pakistani journalist Nasra Hassan interviewed almost 250 people who were either recruiting and training bombers or preparing to go on a suicide mission themselves. "None of the suicide bombers—they ranged in age from eighteen to thirty-eight—conformed to the typical profile

COMMENT

**DAVID
BROOKS**

of the suicidal personality,” Hassan wrote in *The New Yorker*. “None of them were uneducated, desperately poor, simple-minded, or depressed.” The Palestinian bombers tend to be devout, but religious fanaticism does not explain their motivation. Nor does lack of opportunity, because they also tend to be well educated.

Often a bomber believes that a close friend or a member of his family has been killed by Israeli troops, and this is part of his motivation. According to most experts, though, the crucial factor informing the behavior of suicide bombers is loyalty to the group. Suicide bombers go through indoctrination processes similar to the ones that were used by the leaders of the Jim Jones and Solar Temple cults. The bombers are organized into small cells and given countless hours of intense and intimate spiritual training. They are instructed in the details of *jihad*, reminded of the need for revenge, and reassured about the rewards they can expect in the afterlife. They are told that their families will be guaranteed a place with God, and that there are also considerable rewards for their families in this life, including cash bonuses of several thousand dollars donated by the government of Iraq, some individual Saudis, and various groups sympathetic to the cause. Finally, the bombers are told that paradise lies just on the other side of the detonator, that death will feel like nothing more than a pinch.

Members of such groups re-enact past operations. Recruits are sometimes made to lie in empty graves, so that they can see how peaceful death will be; they are reminded that life will bring sickness, old age, and betrayal. “We were in a constant state of worship,” one suicide bomber (who somehow managed to survive his mission) told Hassan. “We told each other that if the Israelis only knew how joy-

ful we were they would whip us to death! Those were the happiest days of my life!”

The bombers are instructed to write or videotape final testimony. (A typical note, from 1995: “I am going to take revenge upon the sons of the mon-

ture to the point where large parts of society, including the bombers’ parents, are addicted to the adrenaline rush of vengeance and murder. Both explanations may be true.

It is certainly the case that vast segments of Palestinian culture have been



keys and the pigs, the Zionist infidels and the enemies of humanity. I am going to meet my holy brother Hisham Hamed and all the other martyrs and saints in paradise.”) Once a bomber has completed his declaration, it would be humiliating for him to back out of the mission. He undergoes a last round of cleansing and prayer and is sent off with his bomb to the appointed pizzeria, coffee shop, disco, or bus.

For many Israelis and Westerners, the strangest aspect of the phenomenon is the televised interview with a bomber’s parents after a massacre. These people have just been told that their child has killed himself and others, and yet they seem happy, proud, and—should the opportunity present itself—ready to send another child off to the afterlife. There are two ways to look at this: One, the parents feel so wronged and humiliated by the Israelis that they would rather sacrifice their children than continue passively to endure. Two, the cult of suicide bombing has infected the broader cul-

ture given over to the creation and nurturing of suicide bombers. Martyrdom has replaced Palestinian independence as the main focus of the Arab media. Suicide bombing is, after all, perfectly suited to the television age. The bombers’ farewell videos provide compelling footage, as do the interviews with families. The bombings themselves produce graphic images of body parts and devastated buildings. Then there are the “weddings” between the martyrs and dark-eyed virgins in paradise (announcements that read like wedding invitations are printed in local newspapers so that friends and neighbors can join in the festivities), the marches and celebrations after each attack, and the displays of things bought with the cash rewards to the families. Woven together, these images make gripping packages that can be aired again and again.

Activities in support of the bombings are increasingly widespread. Last year the BBC shot a segment about so-called Paradise Camps—summer camps in



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which children as young as eight are trained in military drills and taught about suicide bombers. Rallies commonly feature children wearing bombers' belts. Fifth- and sixth-graders have studied poems that celebrate the bombers. At Al Najah University, in the West Bank, a student exhibition last September included a re-created scene of the Sbarro pizzeria in Jerusalem after the suicide bombing there last August: "blood" was splattered everywhere, and mock body parts hung from the ceiling as if blown through the air.

Thus suicide bombing has become phenomenally popular. According to polls, 70 to 80 percent of Palestinians now support it—making the act more popular than Hamas, the Palestinian Islamic Jihad, Fatah, or any of the other groups that sponsor it, and far more popular than the peace process ever was. In addition to satisfying visceral emotions, suicide bombing gives average Palestinians, not just PLO elites, a chance to play a glorified role in the fight against Israel.

Opponents of suicide bombings sometimes do raise their heads. Over the last couple of years educators have moderated the tone of textbooks to reduce and in many cases eliminate the rhetoric of holy war. After the BBC report aired, Palestinian officials vowed to close the Paradise Camps. Nonetheless, Palestinian children grow up in a culture in which suicide bombers are rock stars, sports heroes, and religious idols rolled into one. Reporters who speak with Palestinians about the bombers notice the fire and pride in their eyes.

"I'd be very happy if my daughter killed Sharon," one mother told a reporter from *The San Diego Union-Tribune* last November. "Even if she killed two or three Israelis, I would be happy." Last year I attended a dinner party in Amman at which six distinguished Jordanians—former cabinet ministers and supreme-court justices and a journalist—talked about the Tel Aviv disco bombing, which had occurred a few months earlier. They had some religious qualms about the suicide, but the moral aspect of killing teenage girls—future breeders of Is-

raelis—was not even worth discussing. They spoke of the attack with a quiet sense of satisfaction.

It's hard to know how Israel, and the world, should respond to the rash of suicide bombings and to their embrace by the Palestinian people. To take any action that could be viewed as a concession would be to provoke further attacks, as the U.S. and Israeli withdrawals from Lebanon in the 1980s demonstrated. On the other hand, the Israeli raids on the refugee camps give the suicide bombers a propaganda victory. After Yasir Arafat walked out of the Camp David meetings, he became a pariah to most governments, for killing the peace process. Now, amid Israeli retaliation for the bombings, the global community rises to condemn Israel's actions.

Somehow conditions must be established that would allow the frenzy of suicide bombings to burn itself out. To begin with, the Palestinian and Israeli populations would have to be separated; contact between them inflames the passions that feed the attacks. That would mean shutting down the vast majority of Israeli settlements in the West Bank and Gaza and creating a buffer zone between the two populations. Palestinian life would then no longer be dominated by checkpoints and celebrations of martyrdom; it would be dominated by quotidian issues such as commerce, administration, and garbage collection.

The idea of a buffer zone, which is gaining momentum in Israel, is not without problems. Where, exactly, would the buffer be? Terrorist groups could shoot missiles over it. But it's time to face the reality that the best resource the terrorists have is the culture of martyrdom. This culture is presently powerful, but it is potentially fragile. If it can be interrupted, if the passions can be made to recede, then the Palestinians and the Israelis might go back to hating each other in the normal way, and at a distance. As with many addictions, the solution is to go cold turkey. ■

David Brooks, an Atlantic correspondent, is also a contributing editor of Newsweek, a senior editor of The Weekly Standard, and a political analyst for The NewsHour With Jim Lehrer. His most recent book is Bobos in Paradise (2000).

THE UNIVERSITY AS BUSINESS

Universities have come to regard their students as customers

.....

A number of colleges and universities have announced steep tuition increases for next year—much steeper than the current, very low, rate of inflation. They say the increases are needed because of a loss in value of university endowments heavily invested in common stock. I am skeptical. A business firm chooses the price that maximizes its net revenues, irrespective of fluctuations in income; and increasingly the outlook of universities in the United States is indistinguishable from that of business firms. The rise in tuitions may reflect the fact that economic uncertainty increases the demand for education. The biggest cost of being in school is forgoing income from a job (this is primarily a factor in graduate- and professional-school tuition); the poorer one's job prospects, the more sense it makes to reallocate time from the job market to education, in order to make oneself more marketable.

The close economic similarities between the business and university sectors are often obscured by the fact that university faculties are dense with critics of capitalism. Further, enterprises that operate in the not-for-profit form are supposed to have motivations fundamentally different from those of for-profit enterprises, to justify their tax exemptions. But how realistic is that?

The American university sector is distinctive in being largely private in structure and even more so in behavior; in contrast, almost all foreign universities are public. Even our state universities compete vigorously with one another and with private universities; moreover, increasingly they are only quasi-public. For example, the University of Illinois at Urbana-Champaign—Illinois's flagship public university—receives only 30 percent of its funding from the state.

What "not for profit" means in the university world is simply that a university's surplus of revenue over expenses does not go to shareholders but is instead added to endowment or invested in new projects, much as at a for-profit

firm that doesn't pay dividends. Not-for-profit enterprises often compete just as fiercely as business firms do. Consider the universities' competition for students. It might seem that a profit-maximizing university would simply charge the highest tuition the market would bear and then admit anyone willing to pay it. Actually that would not be profit-maximizing. Faculty members would

have to be paid more to teach slow students; and for students the market value of higher education depends significantly on the quality of their peers—as a signal of worth

to potential employers and because students learn from one another and make valuable contacts for the future.

To increase the perceived quality of the education and the prestige of the institution (things valued by alumni and other potential donors, and by grantors of research contracts), universities compete to attract professorial stars. The result is a great variance in faculty salaries both among and within universities—indeed, often within departments. One thing the stars negotiate for is a reduced teaching load. The slack is picked up by poorly paid graduate students and by non-tenure-track adjuncts with low salaries and no fringe benefits. Some of the stars do little teaching, and some do little research as well, instead moonlighting as "public intellectuals" commenting in the popular media on the events of the day. This commentary is often uninformed, so one might think that a university would fear damage to its trademark; but most universities treasure their celebrity academics. Celebrity advertises the university. And students go to college not merely to learn but also to have a good time. The celebrity professor is an entertainer (though purists will question the appropriateness of tax exemptions for universities that double as entertainment companies).

The ways in which universities make themselves attractive to students include soft majors, student evaluations of teachers, giving students a governance role,

and eliminating required courses. Sky-high tuitions have caused universities to regard their students as customers rather than as kids requiring an intellectual hazing. Just as business firms sometimes collude to lessen the rigors of competition, universities collude to minimize the cost to them of the athletes whom they recruit in order to stimulate alumni donations—so the best athletes now often bypass higher education in order to obtain salaries earlier from professional teams. And until they were stopped by the antitrust authorities, the Ivy League schools colluded to limit competition for the best students, by agreeing not to award scholarships on the basis of merit rather than purely of need—much as if business firms agreed not to give discounts to their best customers.

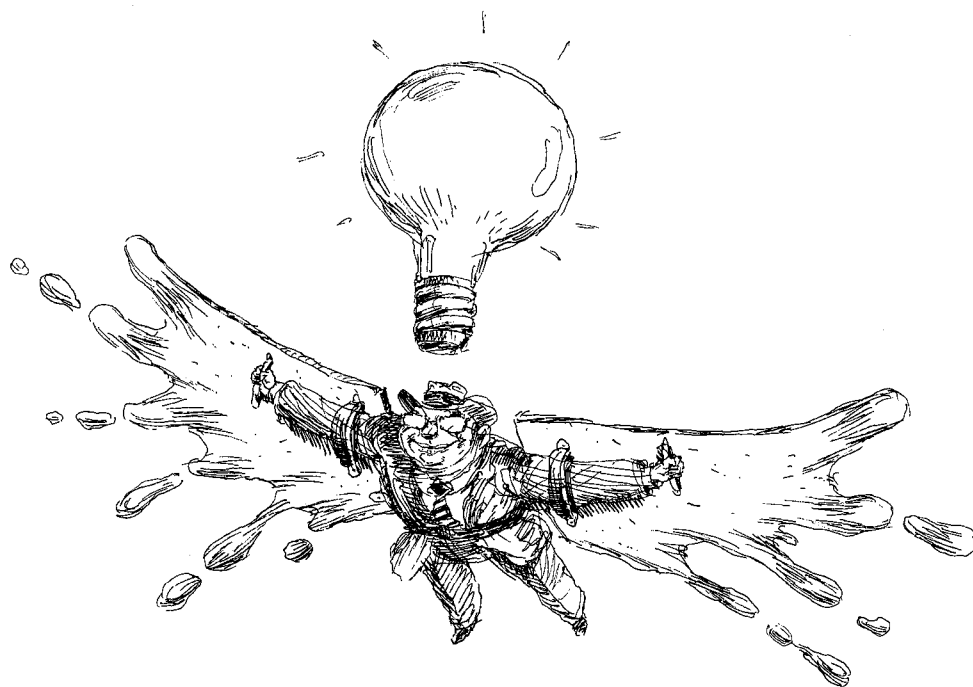
Major universities have become multi-hundred-million-dollar enterprises, and they behave accordingly and are managed accordingly. Gone are the days when a university president was a retired scholar of note. Now presidents are former provosts, and provosts are former deans—a promotion ladder that conforms to the norms of bureaucratic rationality.

The professionalization of the university is part of a broader trend, one first spotted by the German sociologist Max Weber, toward bringing an ever greater range of human activities under the direction of rational principles. Almost everything nowadays is "rationalized," in Weber's sense of the word—businesslike, rule-bound, disenchanted. The loss of enchantment—of idealistic, romantic, charismatic, or otherwise "primitive" or unrealistic methods of coordinating human endeavors—is the source of incessant diatribes against the university's loss of soul.

The loss is real, but we should not overlook the gains, which include wider access to higher education, the dismantling of many discriminatory and archaic practices, and increased breadth and sophistication in many fields of research. The university sector has modernized; but modernity comes with a price. ■

Richard A. Posner is a judge of the U.S. Court of Appeals for the Seventh Circuit and a senior lecturer at the University of Chicago Law School. His most recent book is Public Intellectuals: A Study of Decline (2001).

COMMENT
**RICHARD A.
POSNER**



THE SUCCESS OF FAILURE

*We owe our economic development, our form of government,
and even our physical existence to spectacular flops*

.....

Now that we're coming (we hope) to the end of the recession, let's give thanks for the economic downturn—for being worried and broke, getting fired, and having the value of our investment portfolio reduced to the point that when our stockbroker calls to suggest a trade, he means grocery-store coupons. "It's part of the genius of capitalism," said the Secretary of the Treasury, Paul O'Neill, in January. "People get to make good decisions or bad decisions, and they get to pay the consequences or to enjoy the fruits of their decisions. That's the way the system works."

Of course, O'Neill wasn't talking about the recession. He was talking about Enron. And the system to which he referred is, mainly, the Bush Administration's system of getting off the hook for its involvement with Enron. The Secretary of the Treasury was blowing PR out the seat of his political pants. But truths are sometimes told thus. Rotting dot-coms are a good example—we don't want an economy in which stumbling businesses, intoxicated with bad ideas and blinded by the flash of MBA degrees, aren't permitted to fall down the manhole of Chapter 11.

AT LARGE
**P. J.
O'ROURKE**

The Communist bloc of old was a study in the failure of failure. Losers in the Soviet economy were the people at the end of the long lines for consumer goods. Worse losers were the people who had spent hours getting to the head of the line, only to be told that the goods were unavailable. In the Soviet Union no industry went under until they all did.

This can happen in free societies. In little more than a decade the Japanese economy has gone from frightening powerhouse to frightening, period. Japanese corporations that should be bankrupt continue to receive loans from Japanese banks that actually are bankrupt, owing to a Japanese government that is, politically speaking, bankrupt. The results are a shrinking gross domestic product, enormous public debt, a stock market that has lost three quarters of its value since 1990, and the highest rate of unemployment since World War II.

Not that we want the Japanese to be employed as they were during World War II—conquering Asia, attacking Pearl Harbor, and so on. They were working too hard back then. And this is another reason to keep governments from helping enterprises to avoid death

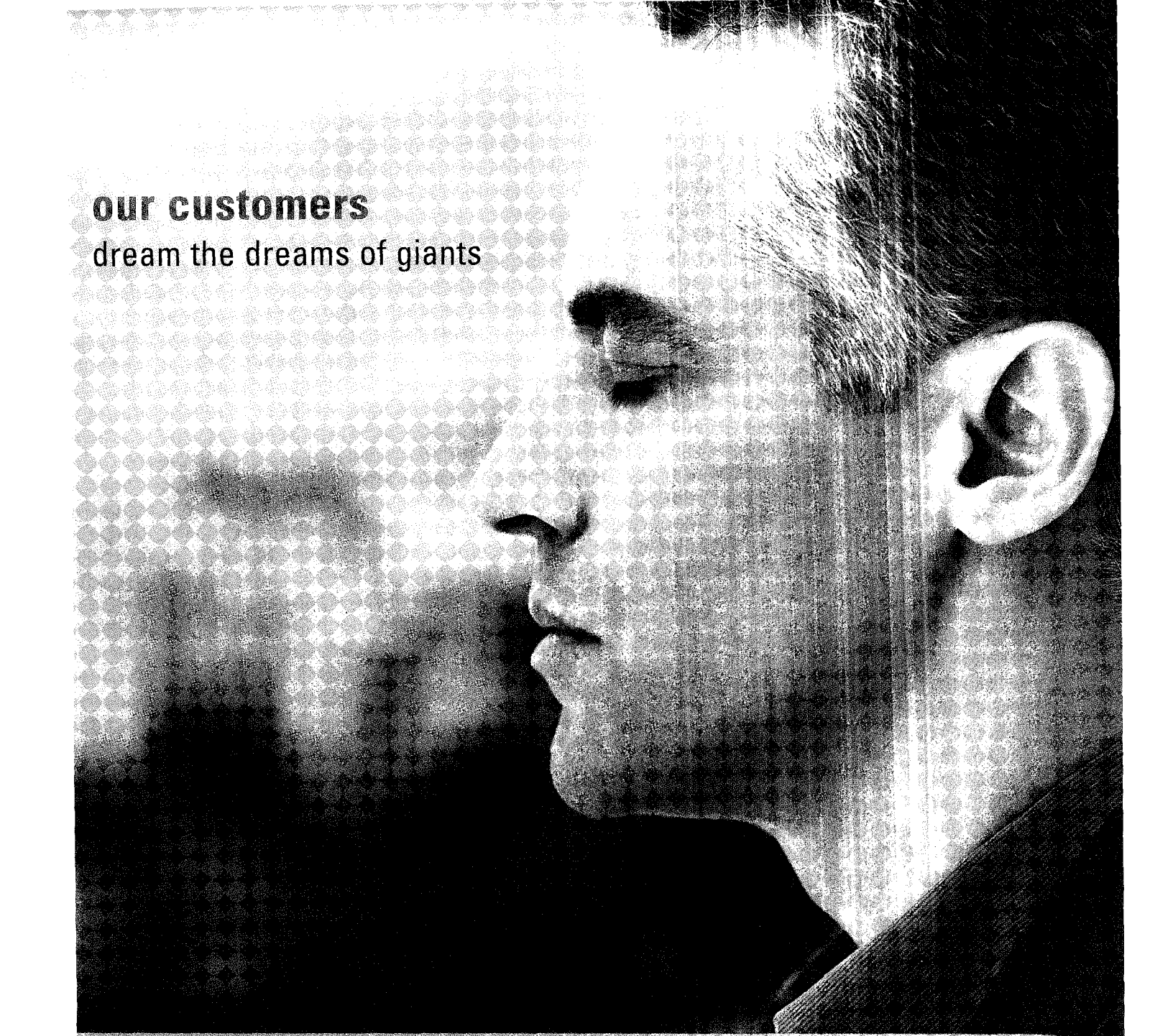
by folly. Compare the learning curves of the private sector and the U.S. government by placing a graph of the NASDAQ stock prices after December of 2000 over a graph of American troop strength in Vietnam after the Tet Offensive. Jeffrey Skilling himself might have been leery of a partnership with Nguyen Van Thieu.

Even in peacetime and under the aegis of supposed believers in marketplace triage, the business of government is hardly folly-proof. By 2030 America is going to have a very large number of retirees living on Social Security. Government subsidies produce—as they did with wheat and cheese—surpluses that do not respond to the usual methods of clearing markets. What will we do with all the old people? We may have to donate them overseas in the hope of aiding developing countries that lack age, wisdom, and bingo.

Fortunately, most of America is still allowed to flop. Otherwise *Vanilla Sky* would still be in the theaters. Instead Tom Cruise, Penélope Cruz, and Cameron Diaz are fascinating again. "There is nobody more boring than the undefeated," Tina Brown once said. If failure didn't matter, Brown's own editing career, from *Vanity Fair* to *The New Yorker* to *Talk*, might have kept going, until at last she was editing the *Encyclopædia Britannica*. Article on quantum mechanics by Cameron Diaz.

Economic failure, however, harms good businesses as well as bad, and we should be grateful for that. The arrogant and greedy come a cropper, and so do the innovators and visionaries. Icarus sees all sorts of possibilities in flight. These elude his task-oriented, linear-minded father, Daedalus, who just wants to get out of Crete. Icarus takes off on his own. He experiences the thrill of a soaring venture, briefly becomes a hot property, gets singed, has a meltdown, and undergoes a rapid decline in personal fortune.

The railroad is another example of a visionary innovation that suffered a worthwhile fizzle. Railroads were vital to American business expansion. But railroad-stock speculation in the 1870s led to an Icarus of a crash. Good as railroads are, do we want a locomotive in

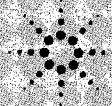


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the driveway? Would it be convenient to take the train to the McDonald's drive-through window? It's probably not a coincidence that shortly after the railroads went bust, the automobile was invented.

A too-visionary adoption of innovation can be disruptive, as the residents of Hiroshima would attest. Private developers of an atomic bomb would have found that the device made a mess and instigated no end of lawsuits. Venture capital would have dried up.

If "Ginger," the two-wheeled gyroscopic people-mover, had been introduced during the innovative, visionary late 1990s, we might be overrun by the things. Literally. Gingers would be whizzing along our sidewalks, caroming off baby carriages, wreaking havoc among dog walkers, and squashing the sleeping homeless. Teenage boys, with youth's ready affinity for new technology, would hot-rod Gingers. Street racing would ensue, causing grisly accidents and loss of life. Congressional hearings would be held. The National Highway Traffic Safety Administration would get involved. Shoulder restraints and protective bodywork would be mandated, along with two extra wheels for stability assurance. By this point Ginger would be a car.

As it is, in the more conservative and pragmatic 2000s Ginger will have a chance to exhibit its merits over time and to become gradually integrated with the transportation network—and then get chucked for being idiotic.

But it's not just economic development that benefits from failure. The growth of democracy depends more on defeat than on victory. In America—unlike in Zimbabwe, for instance—the political system is based on the ability of politicians to be good losers. John Quincy Adams swiped the White House from Andrew Jackson in 1824. Jackson had fought duels, and Indians, and the British. But Old Hickory chose to wait for a metaphorical bloodbath, in 1828, rather than start a real one. Nor did the combative lawyer Samuel J. Tilden stoop to battle the crooked ascendancy of Rutherford B. Hayes. And after the Florida recount imbroglio, Al Gore conceded gracefully. Almost gracefully.

Only once—following the election

of Abraham Lincoln—did prominent American politicians refuse to accept the blessings of failure. They started the Civil War, a failure that has kept the nation free and united ever since.

To failure we owe our form of government and also our actual physical forms. Death was biology's greatest innovation. Without death there's no you. I just keep dividing into endless replications, the whole bunch of myselfs having identity crises and forging a lifestyle truly open to the criticism of being "all about me."

Failure is obviously the key to Darwinian selection. Survival of the fittest can't work if the unfit are still hanging around. There they would go, dodging comet-collision debris, being chased by predators but always managing to escape, getting stuck in tar pits, extracting themselves somehow, and getting tar all over the place. It would drive the fittest mad.

Failure is necessary to evolution. But failure may be equally necessary to the creationist scenario. Picture Adam and Eve, epochs later, all talked out, with the thrill of nudity long expired. Adam keeps mowing and de-thatching and re-seeding paradise. He's given up golf.

He doesn't have the cuss words for it. He putters, putting coat after coat of Thompson's Water Seal on the new pickets for the eleven-thousandth fence around the Tree of Knowledge. Eve redecorates Eden. It's Olympus this month, Valhalla the next, then a modern, minimalist Nirvana style. She changes all the names of the plants and animals and stares at the fig tree, hoping for something new and stunning in this year's leaves. The animals are tired of one another. The lion lies down with the lamb; the lamb snores. The serpent ended up eating all the apples himself. He's gotten too fat to tempt Eve. From this we're supposed to fill a Bible?

It seems a shame that failure is so central to existence and so inevitable. Should there be exceptions? Maybe our economy will become a permanent success when every defeat is faced with renewed determination, when each crisis leads to stronger resolve, when ambition is never relaxed and self-confidence never abandoned. But if that attitude really paid off, the result would be an immortal Richard Nixon. ■

P.J. O'Rourke, a correspondent for The Atlantic, is the author of several books, including The CEO of the Sofa (2001).

THE MOST DANGEROUS BRANCH?

The Supreme Court has been signaling that it will treat Congress roughly in the coming decade—but nobody seems to be paying attention

.....

On Saturday, December 9, 2000, literally minutes before the United States Supreme Court issued its startling 5-4 decision to stay the Florida presidential-ballot recount, I happened to be chatting about the case after tennis with a senior Clinton Administration legal official. Without hesitation my tennis partner, a canny political insider and a seasoned Supreme Court litigator, forecast victory for Gore. The Florida court, he assured a rapt locker-room audience, had "bullet-proofed" its opinion with an elaborate exegesis of the state's complex electoral statutes; no way would conservative justices, whose deference

to state prerogatives was well known, second-guess a state supreme court's painstaking interpretation of its own state's laws.

My friend turned out to be wrong, of course—and he wasn't alone. Nearly all mainstream legal experts were blindsided by *Bush v. Gore*.

The decision should not have come as a surprise. For several years now judicial conservatives have been marching to a new and very different drummer, but to date only a tiny, mostly academic cadre of astute Court watchers has grasped the content and the implications of the Supreme Court majority's agenda. To be sure, the intense partisan

THE LAW
**SIMON
LAZARUS**

struggle over President Bush's judicial nominees has not gone unnoticed. But the media and most politicians simply assume that they're witnessing a recycling of the high-decibel constitutional controversies and judicial-nomination struggles of the 1970s and 1980s. Indeed, President Bush has constantly reiterated his goal of naming "strict constructionists" to the federal bench, and has cited Supreme Court Justices Antonin Scalia and Clarence Thomas as model nominees. In fact, however, Scalia, Thomas, and their ideological followers on and off the Court have a very different view of their judicial philosophy. "I am not a strict constructionist," Scalia has written, "and no one ought to be."

Most observers surmise that the President has in mind candidates who would overturn *Roe v. Wade*, the landmark 1973 decision that made abortion a constitutional right, and other bold Bill of Rights interpretations of that era. But the architects of *Bush v. Gore* have a radically different set of priorities. Their focus is not on dismantling the edifice of "rights" built by "activist" liberal judges when Earl Warren and Warren Burger presided over the Supreme Court—indeed, this majority has often defended free-speech, privacy, and due-process safeguards against the claims of aggressive legislatures and prosecutors. Rather, their focus is on the scope of government power. Brandishing a starkly devolutionist concept of federalism, these new conservatives question decisions as far back as the 1930s that legitimated the New Deal and the Great Society, and that empower Congress to legislate on essentially any matter of national concern. The new credo differs sharply from the judicial restraint practiced by conservative justices such as Burger and Lewis Powell and articulated by the late Yale professor Alexander M. Bickel in his landmark treatise, *The Least Dangerous Branch* (1962).

Clarence Thomas is almost invariably allied with Scalia in expounding and extending this new federalist agenda. Joining in nearly as frequently, but with independent views, is Chief Justice William Rehnquist. More often than not

this trio brings Justices Anthony Kennedy and Sandra Day O'Connor with it—though both sometimes balk at the philosophical claims and practical objectives of their colleagues. Off the Court the majority's themes resonate in the rulings of certain federal appellate judges, in conferences and publications of the conservative lawyers' Federalist Society, and in voluminous published works of conservative scholars at think tanks and universities.

Broad attention to the ideas propounded in these quarters is overdue. If those ideas are substantially realized, they will threaten the viability of major programs in fields as diverse as civil rights, environmental protection, health, and education—in particular the national testing requirements that form the core of President Bush's new No Child Left Behind law. Equally at risk are pending or likely proposals for federal action on such pressing national concerns as cloning and homeland security.

Champions of this new federalism first proclaimed its far-reaching scope and signaled their intense commitment to its principles in two 1995 cases—neither of which stirred significant public attention at the time. In *United States v. Lopez* the 5-4 majority that went on to decide *Bush v. Gore* ruled that Congress's constitutional power to regulate interstate commerce did not justify the Gun Free School Zones Act of 1990, which banned possession of a firearm within a thousand feet of a school. The specific holding of this case was narrow enough to permit Congress to salvage the law with minor technical changes. Nevertheless, the decision provoked an impassioned intramural debate on the Court, spanning six opinions and ninety-five pages in the *United States Supreme Court Reports*. Writing for the majority, Rehnquist dwelt only briefly on the gun ban itself; his real concern, he made clear, was to ensure that this federal remedy for school violence not set a precedent for "direct" federal regulation of the "educational process," such as a "mandate[d] federal curriculum for local elementary and secondary schools."

In dissent, Justice Stephen Breyer



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argued that Congress could readily find a “direct economic link between basic education and industrial productivity.” (And indeed, six years after *Lopez*, precisely because of the widely perceived link between education standards and economic productivity, Bush proposed and Congress enacted mandatory national testing requirements to upgrade public school performance.) But to Rehnquist, it was simply irrelevant that Congress might rationally conclude that education materially affects the economy. In terms calculated to reverberate through decades of opinions to come, he wrote, “We start with first principles. The Constitution creates a Federal Government of enumerated powers.” The enumerated powers do not include non-economic subjects, such as the regulation of local school curricula, over which the states “historically have been sovereign,” and which “the States may regulate but Congress may not.”

Rehnquist’s zeal to wall off traditional state responsibilities from federal authority was reinforced by Thomas in a dissent to a second 1995 decision, *U.S. Term Limits, Inc. v. Thornton*. In this case a

5–4 majority—in which Kennedy voted with the four “liberal” members of the Court—barred states from imposing term limits on their congressional representatives. In his opinion, which was joined by Scalia, Rehnquist, and O’Connor, Thomas wrote that the concept of exclusive state jurisdiction, described by Rehnquist in *Lopez*, extends, “either expressly or by necessary implication,” to all areas that the original Framers of the Constitution neglected to name. Elaborating, he asserted that “the notion of popular sovereignty that undergirds the Constitution does not erase state boundaries, but rather tracks them.” In other words, when the Framers wrote “We the People,” they meant not we the people of a unified nation but we the people of each state. This theory reduces “We the People” to a meaningless rhetorical flourish; the Constitution and the federal government it creates are not instruments of the American people but creatures exclusively of—and hence decidedly junior to—the states and their governments.

Although eye-catching, such attempts to recast the theoretical limits of federal power are less significant

than the operational question of who—Congress or the Court—should decide what those limits are. If there is, to use Rehnquist’s term, a “first principle” of the post-New Deal concept of constitutional governance, surely it is that the people’s elected representatives, not life-tenured judicial appointees, should determine what problems the federal government will address and where in the federal system to assign responsibility.

For the first third of the twentieth century a conservative Supreme Court enforced a laissez-faire ideology by blocking federal regulatory initiatives on federalist grounds. But in 1937, under pressure from President Franklin Roosevelt, the Court changed its tune. Since that time the nation has engaged in innumerable debates about the proper allocation of power between federal and state governments. These debates have spanned virtually all areas of domestic policy—health, education, environmental protection, discrimination, law enforcement, and, currently, euthanasia, abortion, and cloning. But the debates have never been about whether Congress *can* impose national standards; they have been about whether

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it *should*. All sides have assumed that Congress has the constitutional authority to address any problem of national importance.

This was the bedrock assumption that the *Lopez* majority challenged as a violation of constitutional “first principles.” It is a challenge that has brought the nation close to a point where Congress could find itself virtually unable to pass laws regulating any non-economic matters. The majority opinion in *Lopez* indicated that such matters are inherently those that “States may regulate but Congress may not.” Combine that with the February 2001 decision in *Board of Trustees of the University of Alabama v. Garrett*, which barred application of the Americans With Disabilities Act to state employees, and which ruled that even meticulously documented default by state governments will not necessarily permit federal intrusion on state sovereignty to enforce the Fourteenth Amendment. Add the notion—sometimes invoked by the Court majority and frequently repeated by advocates of federalism on the lower federal courts and elsewhere—that control of areas such as education and law enforcement is the states’ “sovereign” prerogative. The result could be that non-economic regulatory laws such as the ADA and the Endangered Species Act become flatly unconstitutional.

As the Yale scholar Bruce Ackerman has shown, the United States has several times cast aside one working model of the Constitution and replaced it with another, each time through a highly political process that has involved Congress, the presidency, and elections as well as the Supreme Court. The most recent makeover occurred in the late 1930s and the 1940s, when the Supreme Court was driven to accommodate the New Deal.

The nation may have arrived at a new constitutional watershed. The question of the moment is whether the confirmation process for Bush’s judicial nominees will spark a vigorous debate on the merits of the new conservative jurisprudence. The issue is not achieving “balance” on the courts between “liberal” and “conservative” judges, as

some Democratic senators and liberal professors have suggested. If Americans elect Republican Presidents, they can expect Republican judges. The issue is the specific agenda of this particular genre of judicial conservatives. Their predecessors were more hard-nosed about the Bill of Rights than their liberal counterparts, but they preached deference to the political branches, and they worked within the post-New Deal constitutional regime. Rehnquist, Scalia, Thomas, and their allies consider themselves outside the consensus that supports that regime. They are working to change it.

At some point groups across the political spectrum will be forced to recalibrate their interest in this debate as they grasp their stakes in such questions as Is the United States a unified democratic nation or, as the Federalist Society claims, a “Federal Republic,” in which autonomous state governments are the sole forum for addressing a wide range of issues? Can the electorate discipline the federal establishment, or is active Court intervention necessary, as the libertarian Cato Institute contends, to “constrain government growth”? Is it unrealistic to retain James Madison’s belief, expressed in *The Federalist* No. 46, that in allocating federal and state functions the people should be free to give “most of their confidence where they may discover it to be most due”? May Congress determine that effective education requires national testing standards, or that anti-terrorist measures require background checks by local police departments on arrestees, gun buyers, or other groups? Do the states need the courts to protect them from congressional overreaching?

Ultimately, this debate is about democracy—about what the defining elements of our constitutional scheme are and, in particular, what place democracy occupies in it. In a recent speech at New York University, Justice Breyer suggested that the Constitution should be understood primarily as an engine for promoting “democratic self-government.” The Constitution itself (and, implicitly, a Court administering it), Breyer said, “does not resolve, and

was not intended to resolve, society’s problems” but rather “provides a *framework* for the creation of *democratically determined solutions* [italics added].”

Many observers may wonder, What’s the big deal? Isn’t this obvious? But one suspects that Breyer felt compelled to make this statement because three of his colleagues on the Court disagree and two others are not sure where they stand.

As the New York University professor Larry Kramer has noted, activist conservatives argue that it is *exclusively* the province of the judiciary—not of Congress, the President, or the states—to say what the Constitution means. They do not view federal lawmaking as a process in which the various interests, including state governments and agencies, arrive at “democratically determined solutions.” On the contrary, they view Congress through the lens of economic libertarianism and its cousin, “public-choice theory,” which cast legislatures as irredeemably warped by the parochial machinations of interest groups and self-seeking officials. New federalists treat the legislative process as merely a first step toward giving the courts the final word on what the law is.

How far will the Court pursue its federalist project? Will it ultimately align the law with the conservative Northwestern law professor Gary Lawson’s view that “the post-New Deal administrative state is unconstitutional”? Will the velocity of change increase if the current, shaky 5–4 majority becomes a rock-solid 6–3 or 7–2? Or will Justice O’Connor or Justice Kennedy team with pragmatic conservative appointees and centrists in the current minority to shape a moderate, “mend it, don’t end it” approach to federal regulatory excess? The bet here is that the new federalists will continue on their way without missing a beat absent engagement in the issue by the President or Congress. And if *Bush v. Gore* taught us anything, it is that when Justices Rehnquist, Scalia, and Thomas know their destination, they will not worry about breaking doctrinal china to get there. ▀

Simon Lazarus is a Washington lawyer and writer who covered regulatory and legal-policy issues on President Jimmy Carter’s White House Domestic Policy Staff.

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CLONING TREVOR

*Granted rare access to the labs of Advanced Cell Technology,
the only U.S. group openly pursuing human cloning
research for medical purposes, our correspondent spent six months
tracking highly experimental work on the cells
of a young boy with a life-threatening genetic disorder*

BY KYLA DUNN

Photography by Sean Kernan

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At 9:00 in the evening on January 29, just as President George W. Bush was about to begin his first State of the Union address, I gathered with three anxious scientists in a small, windowless laboratory in Worcester, Massachusetts. We were at Advanced Cell Technology—a privately owned biotechnology company that briefly made international headlines last fall by publishing the first scientific account of cloned human embryos. The significance of the achievement was debatable: the company's most successful embryo had reached only six cells before it stopped dividing (one other had reached four cells, another had reached two)—a fact that led to a widespread dismissal, in the media and the scientific community, of ACT's "break-through." The work was largely judged to be preliminary, inconsequential, and certainly not worthy of headlines. Many people in political and religious circles, however, had a decidedly different view. They deemed ACT's work an ethical transgression of the highest order and professed shock, indignation, and horror.

Nonetheless, ACT was pressing ahead—which was why I had come to the company's cloning lab that night in January. The door to the lab was locked; a surveillance camera mounted on the ceiling watched our every move; and the mood was at once urgent and tense. A human egg, retrieved just hours earlier from a young donor, was positioned under a microscope, its image glowing on a nearby video monitor. The egg's chromosomes would shortly be removed, and the scientists in the room would attempt to fuse what remained of the egg with a human skin cell. If the procedure succeeded, the result would be a cloned human embryo.

Skin cell to embryo—it's one of the most remarkable quick-change scenarios modern biology has to offer. It's also one of the most controversial. Since the announce-

ment, in 1997, of the cloning of Dolly the sheep, attempts to use human cells for cloning have provoked heated debate in the United States, separating those who have faith in the promise of the new technology from those who envision its dark side and unintended consequences.

Crucial to the debate is the fact that human cloning research falls into two distinct categories: reproductive cloning, a widely frowned-on effort that aims to produce a fully formed child; and therapeutic cloning, a scientifically reputable procedure that takes place entirely at the microscopic level and is designed to advance medical therapies and cure human ailments. The two start out the same way—with a new embryo in a petri dish. But the scientists I was observing in the lab had no intention of creating a person. Instead they were embarking on an experiment that, if successful, would be a first step toward creating radical new cures for patients like the donor of the skin cell—Trevor Ross (not his real name), a two-year-old boy afflicted with a rare and devastating genetic disease.

The mood in the lab was tense in part because of the uncertain outcome of the experiment. But it was also tense because of concern over what President Bush might say about cloning in his address to the nation. A radio in one corner of the room was tuned to the broadcast as the scientists began their work, and they were listening carefully: in perhaps no other field of science are researchers as mindful of which way the political winds are blowing. The ACT scientists had good reason to be concerned—what they were doing that night might soon be made illegal.

On July 31 of last year, by a 100-vote margin, the U.S. House of Representatives passed the Human Cloning Prohibition Act of 2001, which would impose a ban on the creation of cloned human embryos for any purpose,

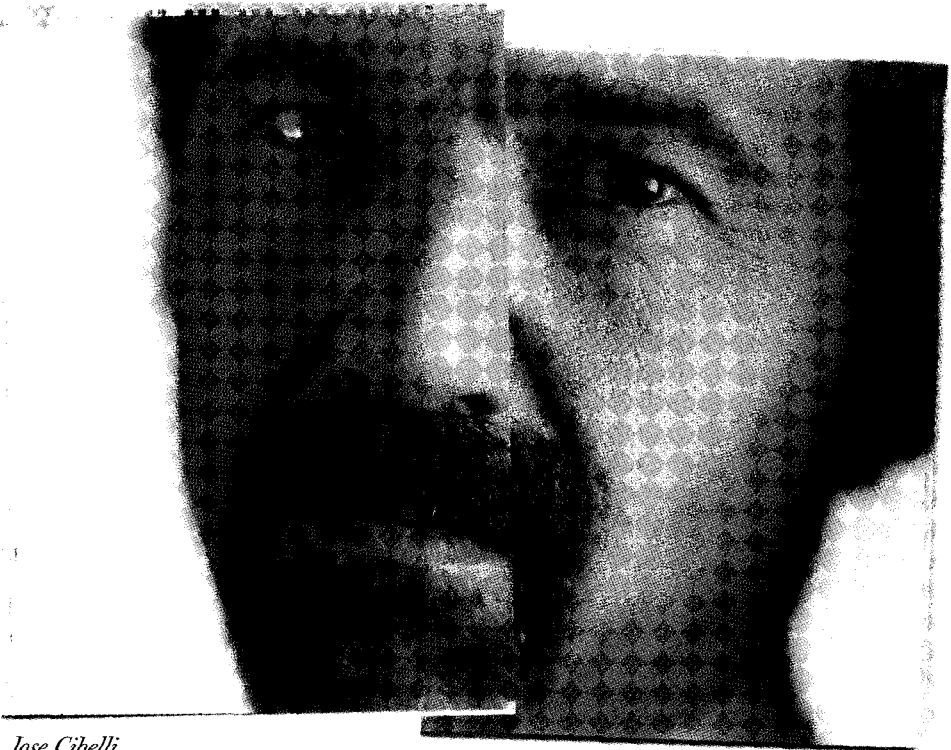
whether reproductive or therapeutic. Both forms of cloning would be punishable by up to ten years in prison and a million-dollar fine. The House passed the measure over the objections of a long list of biomedical organizations (including the Association of American Medical Colleges and the American Society for Cell Biology) and patients' advocacy groups (including the Juvenile Diabetes Research Foundation International, the Alliance for Aging Research, the American Liver Foundation, and the Kidney Cancer Foundation). That same day House members overwhelmingly rejected an amendment, put forward by Congressmen James Greenwood, of Pennsylvania, and Peter Deutsch, of Florida, that would have preserved scientists' ability to use therapeutic-cloning techniques for medical research.

Politics and religion, it seemed, were trumping science. Therapeutic-cloning research was already ineligible for federal funding in the United States. In 1995 Congress had passed legislation barring the use of federal funds for any experiment in which a human embryo is either created or destroyed, thus making official a *de facto* ban that had been in existence since 1975. (Congress has renewed the federal-funding ban annually since 1995 as a provision of the Department of Health and Human Services appropriations bill.) As a result, the burden of moving many areas of important medical research forward has fallen on the private sector, a situation that by many accounts has severely hobbled research into treatments for infertility—and even disorders such as childhood cancer and birth defects. These research areas, like therapeutic-cloning research, demand the kind of long-term study and financial commitment that only the federal government can provide. This past summer human therapeutic cloning already fell squarely under the federal-funding ban, yet Congress was now going further, considering making that research illegal.

In the debate preceding the House vote in July, opponents of therapeutic cloning had warned against the “industrial exploitation of human life” and had conjured up images of “cloned human embryo farms” at which “human beings” would be manufactured as a source of raw material and then “killed” for parts—this despite the fact that researchers envisioned working with five-day-old embryos,

balls of undifferentiated cells that could fit on the point of a pin. Congressman James Sensenbrenner, of Wisconsin, insisted that “those who are interested in values” should vote to ban therapeutic cloning. Tom DeLay, of Texas, the House majority whip, called the practice “monstrous science that lacks any reasonable consideration for the sanctity of human life.” Congressman Chris Smith, of New Jersey, stated plainly, “Creating human embryos for research purposes is unethical, it is wrong, and it ought to be made illegal.” The mood was summed up the following November by Congressman Dennis Kucinich, of Ohio, in the debate that followed ACT’s announcement. Kucinich said, “The Creator that our founders referred to was not ACT.”

During the debate about the House bill, a handful of



Jose Cibelli

speakers had risen to protest what one of them called “this papal event that we are having here today.” Congresswoman Zoe Lofgren, of California, argued, “Our job in Congress is not to pick the most restrictive religious view of science and then impose that view upon federal law.” Greenwood, who co-sponsored the amendment to keep therapeutic-cloning research legal, said, “I am not prepared as a politician to stand on the floor of the House and say, ‘... You cannot go there, Science, because it violates my religious belief.’” He added, “I think it violates the Constitution to take that position.”

In August, President Bush made clear that he agreed with the restrictive position. He characterized therapeutic-cloning research as an attempt “essentially to grow another you, to be available in case you need another heart or lung or liver.” He continued, “We recoil at the idea of grow-

ing human beings for spare body parts, or creating life for our convenience.” The President’s wording did nothing to clear up widespread ignorance of the difference between reproductive and therapeutic cloning. (“What’s going to happen to those clones?” a caller to NPR asked last fall, with typical confusion. “I mean, do they just live in a closet for their whole life?”)

Ever since the passage of the House bill, ACT had been waiting for the Senate to act. A vote had been expected in the fall, but the events of September 11 overshadowed the matter. As the winter recess approached, Tom Daschle, of South Dakota, the Senate’s Democratic majority leader, signaled his intention to bring the cloning issue to a vote by the end of March. “We need to bring some scientific light on this subject,” said Senator Arlen Specter, of Pennsylvania, a supporter of therapeutic-cloning research and the ranking Republican on a subcommittee hosting cloning hearings. “The scientific community is ready to put forward a very strong case, and I think that case will be persuasive to the Congress.” In mid-January the prestigious National Academy of Sciences, created to advise Congress, reiterated its support for therapeutic-cloning research, a move that proponents of the technology were hoping would sway opinion in the Senate. The word on the Hill at the time,

PROGRESS MEASURED IN EGGS

“That’s Trevor’s cells,” Jose Cibelli told me in the ACT cloning lab on January 23. Cibelli is the vice-president of research at ACT, and the scientist in charge of its therapeutic-cloning attempts. He’s a gentle, compact man with dark hair, a trim moustache and goatee, and a vaguely worried expression. A native of Argentina, he speaks quietly and with a thick accent.

It was the first time I had been in the cloning lab, which had the distinct feel of a walk-in closet. Inside the room were a refrigerator, an incubator, a sink, a sterile lab hood, and three microscopes lined up on a black lab bench. Cibelli had just placed a small plastic dish on a microscope platform. Stuck to the bottom of the dish, below a few liquid millimeters of red culture medium, were millions of fibroblasts—living skin cells taken from Trevor Ross.

“The smaller ones just finished dividing,” Cibelli explained as we peered at Trevor’s cells. “So they’re just in G1.” G1 is a rest phase that cells enter before preparing to divide again. It’s also the stage that ACT has found best for cloning. Through the microscope I looked at the smaller cells. In each of them a large round nucleus—the compartment housing a full copy of Trevor’s forty-six chromosomes—was clearly visible. With this payload of DNA, each

TREVOR ROSS’S PARENTS SOUGHT OUT ADVANCED CELL TECHNOLOGY WITH THE RADICAL HOPE THAT THE COMPANY’S THERAPEUTIC-CLONING RESEARCH MIGHT SOMEDAY ALLOW DOCTORS TO CREATE A TRANSPLANT FOR TREVOR THAT WOULD CARRY NO RISK OF REJECTION.

however, was that the vote on a ban could go either way.

Last fall, with the prospect of a Senate vote looming, I decided to take a considered look at cloning research. The time seemed right: it was a unique moment in what could be the development of a major new medical technology, an odd period of legislative limbo in which the first halting steps were being taken toward creating cloned human embryos just as such efforts were in imminent danger of being outlawed.

In particular, I wanted to investigate the work being done by ACT—the only group in the country openly pursuing human therapeutic-cloning research. I wanted to know what motivated ACT’s scientists. I wanted to observe firsthand what was happening in their cloning lab. I wanted to meet ordinary people afflicted with illnesses for which therapeutic cloning represented a potential cure. And, perhaps most important, I wanted to understand what happens to scientific progress when the burdens of research and development in an ethically sensitive area like cloning fall on the private sector rather than on the government. My motives were very much in the spirit of a remark made by Senator Daschle last November, when he helped to prevent a hasty Senate vote on cloning. “Let’s take a deep breath,” he said. “Let’s think about this.”

cell had all the genetic know-how it needed to build a cloned human embryo.

The cells had come from a round plug of Trevor’s skin, three millimeters across, and had arrived at ACT just five days before. The Rosses’ dermatologist had chosen a crease between Trevor’s buttock and thigh, where a scar would not be likely to show, and had punched down with a circular razor blade—past the dead cells of the epidermis and into the dermis, where fibroblasts grow and thrive. The dermatologist had closed the biopsy site with a single stitch. “I was very brave,” Trevor told his mother afterward. During the next several days the Rosses treated Trevor’s wound with dabs of antibiotic ointment and covered it with tiny Winnie-the-Pooh Band-Aids.

Cibelli now had fibroblasts for potential therapeutic-cloning experiments stored away at ACT from five patients: one with a spinal-cord injury, one with diabetes, two with healthy but aging bodies, and Trevor. But skin cells are the easy part—they’re plentiful, hardy, easy to obtain and work with. Eggs are much trickier, and Cibelli had thus started measuring the likelihood of progress not in years but in eggs. “When do I think we’ll get this to work?” he asked me rhetorically. “About two hundred eggs from now.”

“We’ve gotten a handful of eggs so far,” he had earlier

explained. "It's a whole different game when you're talking about animal embryology versus human embryology." In the cow-cloning lab next door, for example, ACT receives 1,400 eggs on a typical day. But whereas cow eggs are available in abundance from slaughterhouses, human eggs must be obtained from young women who have undergone two weeks of hormone injections, regular visits to a doctor, and a nontrivial surgical procedure. All told, it costs ACT about \$22,000 to take an egg-donation procedure from start to finish. "And the number is so small," Cibelli added. "I mean, you get ten eggs! Instead of working with a hundred embryos, I'm working with one." From July to October of last year, ACT collected a total of seventy-one eggs from seven donors—of which only nineteen were designated for cloning. That didn't leave much room for error, or much chance to tinker with conditions that might improve the chances of success.

To make matters worse, the company hadn't had any luck cloning from fibroblasts, which it was hoping to use routinely. In three failed rounds of experiments from July to September not a single egg vested with the DNA of a fibroblast so much as divided from one cell into two. ACT's six-cell embryo, created in October, had been produced not with a skin cell but with an ovarian "cumulus" cell—a type of cell regularly used to clone mice. Unlike skin cells, however, human ovarian cumulus cells are rather difficult to obtain and, obviously, are not available for men.

Given the situation, I asked Cibelli what he would say to critics who might accuse ACT of promising the moon to desperate families like the Rosses long before the technology is ready for the clinic. "I'm not promising anyone anything," he responded, looking surprised. "I am saying that this has the potential to cure all these diseases. There are gaps in the research, but the gaps are getting smaller and smaller." One gap would start to close, of course, when a viable human embryo was created.

At five days of development a human embryo is smaller than a grain of sand. It's a perfectly round ball with a fluid-filled core. The internal architecture of the ball, however, is somewhat lopsided. Huddled against one wall of its interior is a group of cells known as the inner cell mass. The outside of the ball is destined to become the placenta and associated membranes; the inner cell mass is what forms a baby. But after only five days of development no cell's fate has yet been determined—it's impossible to tell which cells will become blood or muscle, skin or brain, gut or liver. All that is present is the simple raw material from which the more than 200 cell types in a human body will eventually be built.

If the inner cell mass of an embryo is removed at this early stage, it can yield cells known as human embryonic stem cells—which retain the ability to form any cell or tissue in the body. In a sense they are immortal, in that they can divide indefinitely in the lab, producing large quantities of cells. With the right coaxing those cells can theoretically be converted into an unlimited supply of tissue for transplant:

new heart muscle for heart-attack survivors; insulin-secreting cells for diabetics; neurons to treat those suffering from spinal-cord injuries, the effects of stroke, or Parkinson's disease. Tissue engineers hope someday to build even more complex structures from these stem cells: new blood vessels for bypass surgery, new liver tissue, even new kidneys—all from what began as a loose collection of cells in a lab dish. They dream of a future in which all kinds of organs and tissues can be custom made to replace those ravaged by disease, injury, or a lifetime of hard use.

Since 1998 human embryonic stem cells have been isolated dozens of times—most often from embryos left over after infertility treatments. Each of these embryos, however, had a unique genetic makeup, and the stem cells derived from it will not be a perfect match for anyone on earth. When transplanted into a patient, therapies created from these stem cells—like donated organs in a traditional transplant—run the risk of being rejected by the immune system.

ACT hopes to use cloning to get around the problem of rejection, by tailoring embryonic stem cells to the patient. The procedure would be as follows: Take a patient's skin cell and create a cloned embryo in the laboratory. Five days later derive stem cells from that embryo and grow them in the lab. Then turn those cells, en masse, into the cellular therapy a patient needs. These would be the patient's "own" cells—a perfect genetic match. Of course, before putting cells into a patient, ACT would need to satisfy the FDA.

The first goal was to prove that the procedure could be done—before the Senate vote, if at all possible. "There are senators who are willing to support this," Cibelli told me. "But we'll really make their work a lot easier if we can show that this is feasible."

So far, it had been slow going. Since ACT's October "success," experiments planned for November, December, and early January had all fallen through—pushed back when an egg donor's hormone regimen failed, when the surgical team slated to collect the eggs had scheduling conflicts, and when ACT was running so low on cash that it couldn't afford to proceed.

After showing me Trevor's cells, Cibelli checked the clock. "We're going to have to get going," he said. It was 5:00 P.M.—time to drive to a fertility clinic just outside of Boston, where the eggs for ACT's experiment that day were being retrieved. We left the lab and headed for Cibelli's car, carrying a portable thermoslike incubator that would be used to transport the eggs. Cibelli plugged the incubator into his car's cigarette lighter, and a row of lights on the incubator began to turn on, registering that it was warming up to body temperature inside.

An hour later, when we arrived at the clinic, the egg-retrieval procedure was still under way, so we went for a cup of coffee at the neighborhood Starbucks. Cibelli placed his cell phone in the middle of our table, and we waited anxiously, fully aware that the number of eggs obtained can

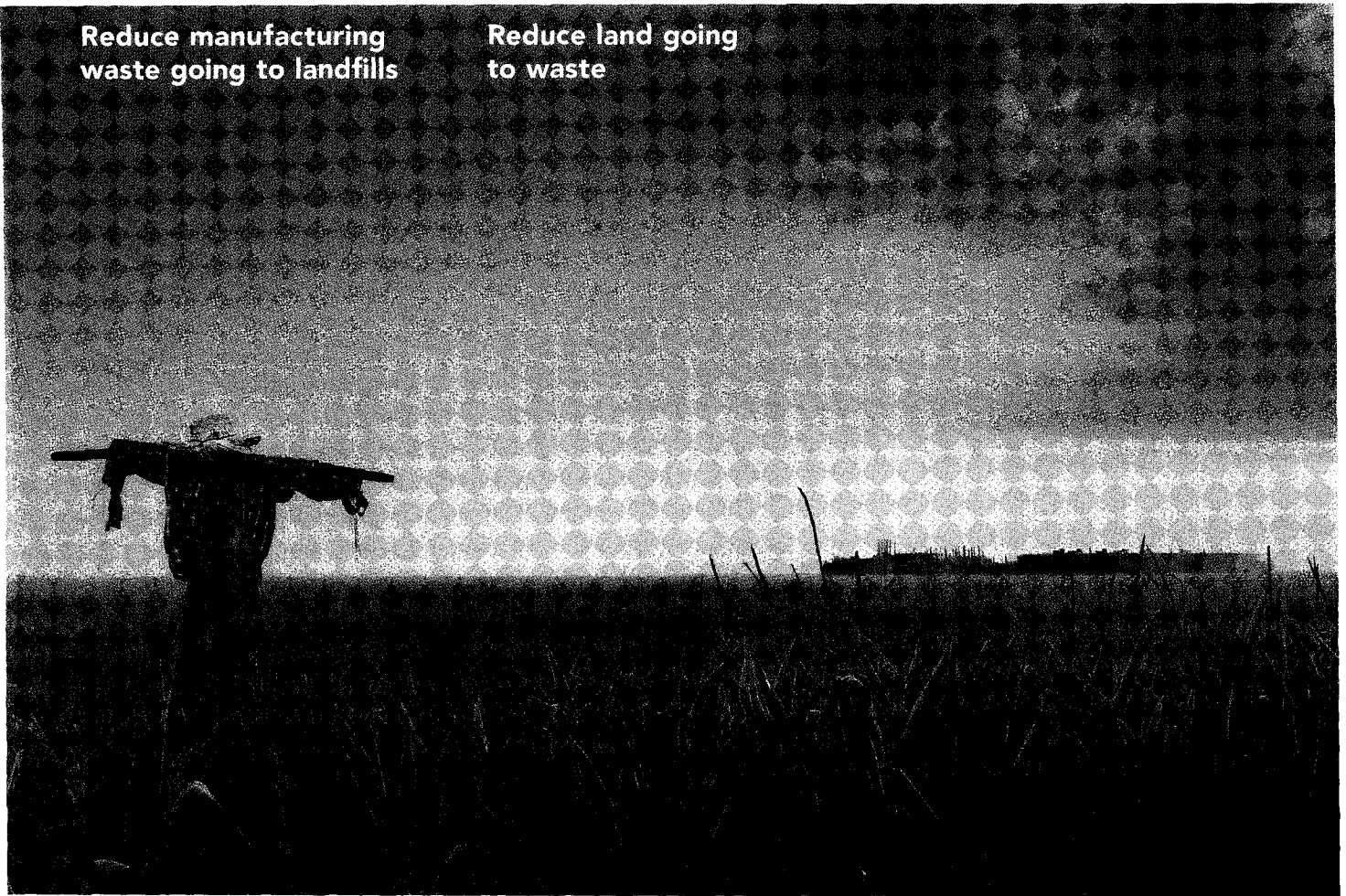
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vary widely. When the phone finally rang, Cibelli checked his caller ID and said, "This is it." He answered the phone and listened for a few seconds. Then his face fell.

The procedure had failed utterly. Three big follicles in one of the donor's ovaries weren't mature enough to yield usable eggs, and the other ovary was positioned behind her uterus, where it couldn't safely be reached.

"Zero," Cibelli said when he hung up the phone, looking crushed. "We've gotten as low as five, but never zero." On the long ride back to Worcester with his empty incubator, Cibelli called to let his team know what had happened. Everyone could go home, he said. They'd try again the following week.

A RADICAL HOPE

Adrienne and Ben Ross (all names of the family members have been changed) first came to ACT late last October, ten months after their son, Trevor, and two of his cousins had received a diagnosis of X-linked adrenoleukodystrophy (ALD), a relatively rare and underdiagnosed genetic disorder that can abruptly ravage the white matter of the brain, with devastating and often fatal results.

The first symptoms had appeared in Trevor's cousin Andrew, a bright boy who loved baseball, competed in spelling bees, and played the violin. Shortly after starting kindergarten, Andrew had been given a diagnosis of attention deficit hyperactivity disorder, but otherwise he seemed to be thriving. Within a few years, however, his cognitive abilities seemed to have changed. He would regularly ask the same questions again and again. By the time Andrew was eight years old, it was clear that something grave was at work. His karate teacher began to notice a dramatic and progressive loss of coordination. Andrew was having increasing difficulty following instructions or participating in the classroom. In December of 2000, after an MRI, his ALD was diagnosed; soon after, with alarming swiftness, Andrew went blind and deaf, and then lost motor and bowel control. At the age of nine he was in a nearly vegetative state, unable to speak or move.

Andrew had developed what is known as childhood cerebral onset of ALD, a condition that afflicts a third of the disease's victims—who, for genetic reasons, are almost always boys. Half of boys with childhood cerebral onset are dead by the age of nine. Boys with ALD who are lucky enough to escape childhood cerebral onset are almost certain to suffer a degeneration of the spinal cord in adulthood, which can lead to such symptoms as muscle spasms in the legs, loss of bladder control, and general weakness and stiffness. Although symptoms in adults can vary a great deal in severity, a third of adults with the disease also develop brain involvement and are reduced to a vegetative state or die within three to four years of onset.

Within a week of Andrew's diagnosis the other boys in his extended family were tested for ALD, and a tragic pattern was revealed. Andrew's seven-year-old brother,

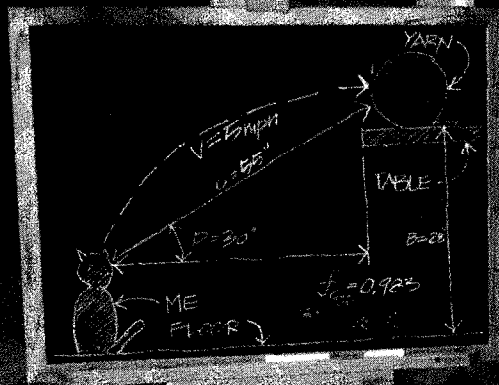
Eric, had inherited the abnormal gene. So had Trevor, then barely a year old.

Currently, the best treatment for childhood cerebral onset of ALD is a bone-marrow or umbilical-cord-blood transplant from a healthy, well-matched donor. This procedure can halt or even reverse the progression of the disease, for reasons that aren't fully understood; it appears that some of the healthy transplanted cells travel to the brain, where they are able to prevent further damage. Compatible transplant donors are extraordinarily hard to find, however—and even when suitable donors are found, the transplants don't always take. Sometimes transplants don't work because a patient's immune system rejects the transplanted cells as foreign. In other cases mature immune cells in the transplanted material actually reject and attack their new host, a life-threatening condition known as graft-versus-host disease. Radiation and chemotherapy before a transplant—and immunosuppressive drugs afterward—can help to reduce the risks of rejection, but they also leave a patient vulnerable to serious infection. Overall, the odds aren't good: according to one expert, a quarter of the boys who receive a bone-marrow transplant to treat ALD die from complications related to the procedure.

In Andrew's case the diagnosis came too late for a transplant to have any effect. But for Trevor there still seemed to be time even to push experimental treatments forward, because his brain hadn't yet shown any evidence of deterioration. Only once have neurological symptoms of ALD been observed in a child under the age of three, and about half of boys with childhood cerebral onset develop normally until age seven. And it was conceivable that Trevor wouldn't develop symptoms until adulthood, so researchers might have a couple of decades to find a better cure for him.

The Rosses had sought out ACT with the radical hope that therapeutic cloning might someday allow doctors to create a transplant that would carry no risk of rejection. The work of a bone-marrow transplant is actually done by hematopoietic stem cells—cells in the marrow that restock our blood and immune systems throughout life, serving as a reservoir of new components as old ones wear out. HSCs are also the cells that have rescued patients with ALD. What the Rosses were exploring with ACT was the idea of coaxing human embryonic stem cells, taken from cloned embryos, into forming HSCs that might someday save Trevor.

When the Rosses first traveled to ACT to talk about Trevor's case, they met with Michael West, a dreamy, laid-back forty-eight-year-old with a lopsided grin. West is the company's president and chief executive officer, and a well-known figure in biotech circles. In 1990, at the age of thirty-six, with a Ph.D. in cell biology and one year of medical school completed, West founded a company in Menlo Park, California, called Geron Corporation, now the industry front-runner in human embryonic-



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stem-cell research. West's goal was to develop treatments for age-related disease. Five years later he launched a full-fledged effort to obtain human embryonic stem cells. "I was quite convinced of the power of these cells to do things that we've never been able to do before," he told me during one of our many recent conversations. "The whole intent was to get some new tools in the toolbox for physicians." West roamed the country, appearing on the doorsteps of top embryonic-stem-cell researchers (who were then working with animal cells) and offering them financial backing to work with human cells—money unavailable from government sources because of the federal-funding ban. These efforts paid off in 1998, when James Thomson, of the University of Wisconsin, with funding from Geron, successfully isolated the cells from human embryos for the first time. By then, however, amid growing friction with Geron's management team, West had left the company and joined ACT, in October of 1998. His intention was to apply ACT's cloning technology to human medicine.

At his meeting with the Rosses, West opened up a laptop computer and hit a key to start a video of the cloning procedure. "This is how it works," he told the Rosses. A magnified gray egg cell appeared on the screen. Adrienne and Ben leaned forward to get a better look. As they watched, a glass

Someday the procedure might be used to add a functional ALD gene to cells from Trevor's own bone marrow. This was another approach the Rosses were pursuing, but it's very experimental, and scientists are having difficulty modifying all the cells that need therapy in a patient, and difficulty ensuring reliable long-term expression of the new genes.

What therapeutic cloning should allow scientists to do, West explained, is provide a pure population of genetically modified cells. Use one modified cell for cloning, and the entire cloned embryo will then carry that modification. So will embryonic stem cells derived from it, and any therapeutic tissues they produce. Alternatively, scientists could do the modification in embryonic stem cells after cloning, and then grow a limitless supply of tissue from one properly modified cell. "We can give the patient cells that all have the same precise targeted modification," West said. "One hundred percent. We won't do that with gene therapy in our lifetime."

A therapy for Trevor isn't the only thing at stake. The stem cells derived from cloned embryos bearing an ALD mutation could be powerful research tools. In fact, scientists consider creating cloned embryos that match patients with a genetic predisposition to disease to be one of the most important therapeutic applications of the technology, because, for one thing, it would allow diseased tissues of all kinds to

PRESIDENT BUSH HAS MADE IT CLEAR THAT HE IS "100 PERCENT OPPOSED" TO ANY TYPE OF HUMAN CLONING. HE HAS CALLED ACT'S WORK "MORALLY WRONG," AND HOUSE MEMBERS HAVE WARNED THAT THE "MAD SCIENTISTS" DOING THIS "GHOULISH WORK" MUST BE STOPPED.

tool wielded by an invisible technician carefully sucked out the egg cell's chromosomes and then placed the egg in contact with a skin cell, in preparation for fusion. "This is bovine," West said—a reminder that he was showing the Rosses an example of cow cloning, not human cloning.

Creating cloned cow embryos had become routine at ACT, and the company's scientists were regularly nurturing them into blastocysts—balls of about 100 to 150 cells. The blastocyst stage of development is the point at which stem cells can be isolated. What West didn't mention to the Rosses is that despite months of effort, his scientists had not yet had any luck creating a human blastocyst. "We're working hard," he told them simply. "I'm not showing you the human data yet on purpose, because we haven't published it yet and we don't talk about human data." He wanted to emphasize the technology's promise, of course—an unlimited supply of tissue that matches a patient perfectly.

But Trevor needed something more: cloned cells in which the debilitating ALD mutation had been corrected. A leading experimental approach to correcting this kind of defect is a procedure known as gene therapy, which uses a modified virus to shuttle new genes into a patient's body cells. The virus infects a cell, carries a therapeutic gene to the nucleus, and inserts it into the DNA at a random location.

be created and studied in the lab. But such work is rarely discussed in the political debate about cloning.

As she listened to West spin out optimistic future scenarios, Adrienne began to wonder if they would be able to proceed—or if using Trevor's cells for cloning would be pushing the bounds of the law as well as of science. "Can you clarify for me?" she asked, interrupting West. "On the cloning side, if you're not using federal funds, can you do what you want?"

It's understandable that she would wonder. The House's anti-cloning legislation was designed to make everything Mike West and the Rosses were discussing that day illegal. If the Senate were to pass the bill, not only could ACT's scientists be prosecuted for attempting therapeutic cloning for Trevor but Adrienne and Ben could be prosecuted for participating in such an attempt. One provision of the legislation would make it illegal even to "import" a life-saving medical therapy developed elsewhere in the world through cloning.

Adrienne's question was a sore point for West. "Yeah, we're free to do what we want," he answered simply.

"But now they're looking to try to ban that?" Adrienne asked.

West hesitated. "Well, I don't know," he said. "The Senate

at some point will take this up, and my honest, best read is, I don't believe the Senate will pass it." Still, he admitted, anything could happen. "We could lose," he said, "and that would be tragic."

For the moment, however, therapeutic-cloning research was legal—and the Rosses were ready to get started. "So," Ben said over lunch, pulling a ball-point pen and a scrap of paper from his pocket. "What's the checklist?" Scheduling Trevor's skin-punch biopsy went to the top. So did a reminder to send ACT the sequence of the ALD gene mutation afflicting the Ross family—and a healthy sequence that could be used to correct it.

"And are you just as happy with the eggs you have, or do you need eggs from us?" Adrienne asked.



Michael West

"I could mention to our ethics board that you're interested in donating egg cells," West answered. "We should set ourselves up for as much success as we can."

West was referring to a potential complication with therapeutic cloning. The procedure involves the transfer of a patient's cell nucleus into an egg from which the nuclear chromosomes have been removed. But those chromosomes are not the sum total of an egg's DNA. A small amount of DNA is located outside the nucleus, in energy-producing structures called mitochondria. The amount of genetic information they contain is tiny, involving only a few dozen functioning genes, as opposed to the tens of thousands found in a cell nucleus. Still, studies in mice and rats have shown that unfamiliar mitochondrial proteins can provoke an immune rejection response. If the differences in mitochondrial DNA between egg donor and patient are too great,

the patient's body may reject the cloned tissue as foreign.

"If you took mitochondria from the maternal lineage of the patient," West told the Rosses, "then there's no conflict. You're home free." Mitochondria are passed exclusively from mother to child, so all relatives with the same maternal lineage have the same mitochondrial DNA. This meant that many women in Adrienne's family could donate eggs that would be a perfect mitochondrial match for Trevor's body tissues.

The science, however, still had a considerable way to go. Even if ACT were able to create cloned embryos and isolate stem cells, turning those cells into hematopoietic stem cells suitable for transplant could be difficult—at the time, scientists had yet to produce HSCs, even in animals, that could migrate to the bone marrow, take up residence there,

and produce useful blood and immune-system cells over the long term.

Nevertheless, West was upbeat. "You guys should take encouragement," he told the Rosses. "This is doable. It's only a question of can we mobilize the people. It won't happen unless people work on it."

Ben nodded his head. "Well, you let us know what we can do to help."

A PUBLIC-RELATIONS DISASTER

A few weeks later ACT took a risk that could have put the company out of business—and, worse, could have closed the door on the budding field of therapeutic-cloning research. On November 9 the company e-mailed a hastily

written scientific paper to *e-biomed: The Journal of Regenerative Medicine*, an online publication known for its quick turnaround time. The paper announced dryly that in ACT's lab "three somatic cell-derived embryos developed beyond the pronuclear stage." Robert Lanza, ACT's vice-president of medical and scientific development, called before the report came out to give me a translation. "The news is going to be that we have the world's first cloned human embryos," he said. "I just want to give you a heads-up—because when we make this announcement, it might bump the war [on terrorism] off the front page."

On almost every level the announcement was premature. ACT's original goal had been to publish in a prestigious journal like *Science* or *Nature*, when the company had what it is really after: human embryonic stem cells derived from a cloned embryo. ACT had nothing like that—it had

managed only to sustain a cloned embryo to the six-cell stage of development.

At first, ACT's scientists say, they were uncertain whether they should publish such preliminary data. But given that they were working in an ethically fraught area of science, they decided to be as open as possible about their progress.

After Lanza called me about the imminent publication of ACT's cloning paper, I traveled to his house, on an island in a pond in central Massachusetts, to discuss the announcement. Lanza is in his mid-forties, animated and boyish, with graying brown hair that sticks straight up from his head. He, West, and Cibelli form ACT's core triumvirate. As we sat at his kitchen table, Lanza told me that rumors in the scientific community were starting to make him nervous. Apparently the mavericks of the cloning world—those trying to produce a baby—were possibly on the verge of getting some preliminary results. "If they should come out and make some sort of an announcement first," Lanza said, "it could do severe damage. Because when it breaks, if their goal is reproductive cloning, all of the research will be banned. It will be killed—and it won't matter what we say, because no one's going to listen anymore." Last year, in fact, the outrage surrounding the mavericks' activities had directly contributed to the passage of the House anti-cloning bill.

But ACT itself also bore responsibility. On July 12, just weeks prior to the bill's passage, *The Washington Post* had broken the news that ACT was trying to create cloned human embryos as a source of stem cells—making it the only group in the country to acknowledge such plans publicly. The uproar that followed was still fresh in congressional minds at the time of the vote. Congressman Bart Stupak, of Michigan, one of the bill's co-sponsors, alluded on the day of the vote not only to the renegades but also to ACT. "The need for action is clear," he told his colleagues. "Research firms have announced their intentions to clone embryos for research purposes and then discard what is not needed."

A week before the publication of ACT's paper in *The Journal of Regenerative Medicine*, I called Thomas Okarma, the current chief executive officer of Geron, to get his views on ACT and its reputation. Despite his commitment to stem-cell and therapeutic-cloning research, Okarma was harshly critical of ACT. "They've done more harm to the field than good, I'm afraid," he told me. The most glaring example, he said, was ACT's announcement, just after Mike West joined the company, in the fall of 1998, that it was attempting to fuse human skin cells with cow eggs whose nuclear DNA had been removed. The motivation was sound: ACT was essentially hoping to do therapeutic cloning without the difficulty and expense of using human eggs—reviving experiments Jose Cibelli had started as a graduate student, in 1996, with his own cells. But, in the interest of "transparency" West released details to *The New York Times* and *48 Hours*, and two days after the news broke, President Bill Clinton, "deeply troubled" by the

work, asked the head of his National Bioethics Advisory Commission to investigate. By an unfortunate coincidence, one week before the *48 Hours* broadcast, scientists had announced that they had derived human embryonic stem cells for the first time—news that made ACT's announcement seem like me-too publicity.

The cow-human embryos turned out to be "just plain duds," according to West, and ACT has never generated enough data for a significant scientific paper. (Members of the scientific community had predicted this outcome, although researchers in China have recently claimed success using rabbit eggs.) But the damage was done, because the public entirely misinterpreted the experiments. "Religious fundamentalists who, you know, are against reproductive and therapeutic cloning anyway, are using this example," Okarma told me. "My God, they say, 'these people are going to make chimeric creatures—mixing cows and humans.' It creates a fantasied negative scenario that casts an umbra on all of us working in the field, and makes it harder for the field to advance. And it's well documented in the scientific literature that fusing cells from two such distantly related species will not work." Okarma was not alone in dismissing ACT: the company's "publication by press release" was widely attacked by other scientists as irresponsible and insubstantial.

He added, "It's not in the same category as the Raëlians—a religious group, inspired by "revelations" from extraterrestrials, that is working on reproductive cloning—"because there are certainly legitimate scientists at ACT trying to do this work, okay? But from the perspective of the regulatory bodies, they are in the same spaceship."

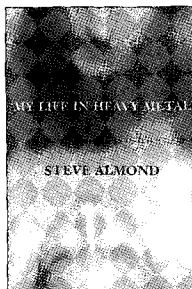
BACKLASH

When Bob Lanza joined ACT, in March of 1999, not long after the cow-human cloning fiasco, it was a company bruised and embarrassed by recent events, and in need of building its scientific reputation. Lanza was a strong addition to the team.

He had gotten started young. When Lanza was just eighteen, he published his first research paper—in *Nature*, a journal many scientists strive a lifetime to publish in. The paper involved the results of biology experiments he had started in his parents' basement, in the Boston area, at the age of twelve. As a thirteen-year-old Lanza had gone to Harvard seeking advice and had stumbled on Stephen Kuffler, the chairman of the department of neurobiology. Kuffler (whom the boy initially mistook for a janitor) helped Lanza to finish his experiments and work toward publication. From then on Lanza bootstrapped his way along, invoking the name of one scientist to gain access to the next. He ended up accumulating an astonishing list of apprenticeships. He worked with Jonas Salk, the engineer of the polio vaccine; with the renowned behavioral psychologist B. F. Skinner; and with the Nobel laureates Gerald Edelman and Rodney Porter, who uncovered the

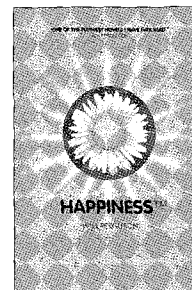
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(Personal recommendations from your independent booksellers with BOOK SENSE)



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HAPPINESS, by Will Ferguson (Canongate, \$24)
 "A hilarious romp! A lowly sub-editor at a major publishing house discovers a manuscript in the slush pile that becomes the ultimate self-help book, unleashing unmitigated happiness on the world. Aging baby boomers, self-absorbed self-helpers; they're all here."—BARBARA BOGART, BEAR RIVER BOOKS, EVANSTON, WY



THINGS YOU GET FOR FREE, by Michael McGirr (Atlantic Monthly, \$25) "A Jesuit priest and his mother leave Australia for a European holiday. Warm, witty, wise, and wonderful are these musings on faith, family, friends, and assorted strangers. A charming tale of trials and travels."—MARGARET POPPE, BOOKS & BOOKS, CORAL GABLES, FL

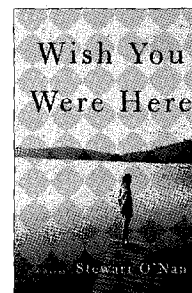


LOST NATION, Jeffrey Lent (Atlantic Monthly, \$25)
 "From the opening words, I was riveted by the heart-piercing dialogue, the sparseness of the setting, and the assault of the characters. I loved every second of this book! I'm hooked, and will put this book into the hands of all of my customers."—ANNIE KYRKOSTAS, BOOK MARK CAFÉ, OYSTER BAY, NY

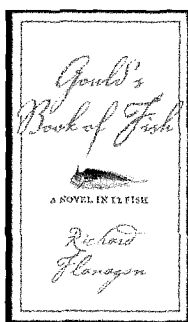


BEAR ME SAFELY OVER, by Sheri Joseph (Atlantic Monthly, \$23) "This is a wonderful debut novel that portrayed emotions as they exist in the real world. I especially liked how the sisters and the two families resolve their many differences."—TINA KRUGER, VON'S BOOKS, WEST LAFAYETTE, IN

WISH YOU WERE HERE, by Stewart O'Nan (Grove, \$25)
 "O'Nan has an immense range and an ear for the perfect pitch of the human heart. The Maxwell family gathers for a final visit to their summerhouse. Take this book with you on vacation, but be warned: You may be so compelled by the Maxwell's gathering, you'll be late to join your own!"—CATHY KEIBLER, HAWLEY-COOKE BOOKSELLERS, LOUISVILLE, KY



GOULD'S BOOK OF FISH: A Novel in Twelve Fish, by Richard Flanagan (Grove, \$27.50) "This vast, artful, audacious epic poses as the journal of a penal island convict who relates tales of the island's eccentric inhabitants and the atrocities they perpetrate. Flanagan's narrative sweep, vivid imagination, and rugged poeticism make him a world-class author."—JAMIE KORNEGAY, SQUARE BOOKS, OXFORD, MS



WAVEMAKER II, by Mary-Beth Hughes (Atlantic Monthly, \$24) "Wonderful, moving fiction with a histrionic pull; it's quite a literary achievement for a debut. A subtle, emotive novel for a discerning audience."
 —JAMES PIECHOTA, BOOKS AT A GLANCE, SAN FRANCISCO, CA

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PERSONALITY - PASSION - KNOWLEDGE - COMMUNITY - CHARACTER

structure of antibodies. Lanza did surgeries in South Africa with the pioneer of heart transplantation, Christiaan Barnard, and while he was still in medical school he co-wrote the first textbook on heart transplantation, with Barnard and David Cooper.

One of the first things Lanza did after he joined ACT was to recruit sixty-seven Nobel laureates to sign a letter urging the Clinton Administration to support federal funding for human embryonic-stem-cell research. He tracked them down one by one, calling them and enlisting them in the cause. He sent a similar letter, carrying eighty signatures, to President Bush in February of last year. Lanza's efforts were part of a snowball effect. A month later the presidents of more than a hundred universities and colleges sent their own petition to the Secretary of Health and Human Services. By last summer even some pro-life conservatives, such as Senator Orrin Hatch, of Utah, had come out in favor of the research, as had former First Lady Nancy Reagan.

Lanza and his colleagues hoped to generate a similar effect with their cloning announcement. The press release that they prepared also referred readers to feature stories about their cloning "milestone" that would be appearing on the covers of *Scientific American* and *U.S. News & World Report*. The stories were written by journalists who had a long association with ACT, and the *Scientific American* article was in fact co-authored by the ACT scientists and written in their own voices. These articles ended up being scheduled to go online at exactly 9:00 A.M. EST on November 25—the precise moment that the

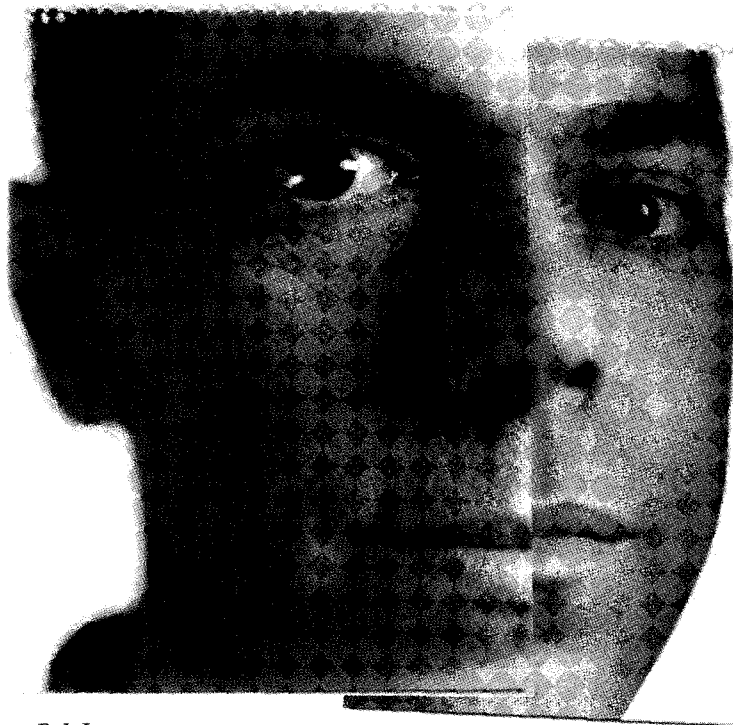
Journal of Regenerative Medicine article itself was to appear online. Mike West was also scheduled for a 10:00 A.M. appearance on NBC's *Meet the Press* that day.

"You can see how things are lined up," Lanza told me about the articles. "We're getting our ammunition all in the barrel. At least people will understand that there is a legitimate medical use for this technology. And even though we may get beat up, I hope there's minimal damage."

When ACT's paper became public, on the Sunday of Thanksgiving weekend, the backlash was swift. The White House made it clear immediately that President Bush was "100 percent opposed to any type of cloning of human embryos." The following day, in a Rose Garden appearance, the President called ACT's work "morally wrong," and added, "We should not, as a society,

grow life to destroy it. And that's exactly what's taking place." The Vatican issued a statement expressing "unequivocal condemnation" of therapeutic cloning, which it portrayed as tantamount to murder. Conservative members of both houses of Congress, backed by anti-abortion and religious groups, joined the President in calling for immediate Senate action, warning that the "mad scientists" doing this "ghoulish work" must be stopped. When I spoke with Bob Lanza on the Friday after the announcement, protesters from pro-life groups were outside ACT's office building, which was being guarded by police cruisers. Its front doors—usually left open—were locked.

Earlier in the month Sam Brownback, of Kansas, the Senate's most vocal advocate of a total ban on cloning re-



Bob Lanza

search, had struck a deal with the Senate's Democratic leadership, agreeing to delay action on human cloning legislation until February or March of this year. All had been quiet on the legislative front, with a thoughtful debate planned on the merits of the technology. But after ACT's announcement, that agreement went out the window. Brownback immediately resumed attempts to force a vote on a ban—or, failing that, to impose a six-month moratorium on all human cloning research. "I have been warning this body for months that this day was going to be here. Now it's here," he said in the Senate. "We now have the first human clone."

"I was frankly horrified," Tom Okarma told me the week after the announcement. "This is precisely what the opposition has been waiting for. They can now mount a renewed offensive to proscribe or outlaw this technology, and there won't be any credible scientists who push back, because

no value has been demonstrated by the experiment ACT published. It hasn't moved the field one millimeter. It's essentially negative results. And no legitimate scientist will stand behind that."

None did. Instead they pointed out that ACT's experiment didn't actually make clear whether creating a healthy cloned human embryo was even possible, since the researchers hadn't succeeded in nurturing an embryo beyond the six-cell stage. Human eggs are packed with factors that control the first few rounds of cell division, which meant that the cloned embryos created by ACT may simply have been cruising on autopilot, without the donor cells' DNA ever having taken over the controls. "It's a complete failure," George Seidel, a cloning expert at Colorado State University, in Fort Collins, told *The New York Times* about the experiment. Ian Wilmut, one of the researchers who cloned Dolly, told London's *Independent* newspaper, "In terms of what this says for human cloning, it is pretty irrelevant." John Gearhart, of the Johns Hopkins University School of Medicine, said in an interview aired on ABC that the research was so preliminary that "it should not have been published."

But it wasn't the preliminary nature of the research that had raised scientists' ire so much as the fanfare with which it had been published. In the 1960s and 70s, when Robert

Chronicle editorialized. "In reality, the achievements ... are skimpy." *The Washington Post* concurred, calling the work "less than meets the eye." An article in the *Los Angeles Times* dismissed the "big breakthrough" as "a yawn." *The New York Times* was no less critical. "Unfortunately," an editorial in the paper read, "by rushing into print with such preliminary results, and orchestrating a media blitz to accompany the announcement, Advanced Cell Technology has invited legislative retaliation that could cripple the very research it is attempting to pioneer." In terms of ACT's credibility, it seemed to be the cow-human-embryo fiasco all over again.

One of the more bruising assessments came from Harold Varmus, a Nobel laureate and a former director of the National Institutes of Health. "So why did the company make its announcement?" Varmus wrote in *The New York Times*. "Although its executives claimed to be excited about the findings and said the information would promote educational debate, the actual reasons may be more self-serving. Biotechnology companies are dependent on investors, and investors like publicity."

In January, I asked Cibelli if he had any regrets about the announcement. "No," he said. "It brought the issue back to the table, and that's what we wanted. We predicted that we would be criticized by our peers. We took a calculated

AFTER ACT ANNOUNCED ITS INITIAL "SUCCESSSES" WITH HUMAN CLONING, THE NEW YORK TIMES WROTE IN AN EDITORIAL, "ADVANCED CELL TECHNOLOGY HAS INVITED LEGISLATIVE RETALIATION THAT COULD CRIPPLE THE VERY RESEARCH IT IS ATTEMPTING TO PIONEER."

Edwards and Patrick Steptoe were attempting to create the first baby through *in vitro* fertilization, they similarly published the results of a number of steps along the way. Before they had even created a blastocyst, much less a pregnancy, they published reports in *Nature* of the first time human sperm cells penetrated human eggs in the lab dish, and of the first time such embryos faltered along to just sixteen cells. ACT's paper had done essentially the same thing.

The scientific consensus, though, was that ACT's public-relations campaign had raced far ahead of its data. "Important Milestone in Therapeutic Cloning," ACT had headlined its press release, which claimed in the opening paragraph that the experiment provided "the first proof that reprogrammed human cells can supply tissue for transplantation." Given that there were no human embryonic stem cells and no transplantable tissue in evidence, it had done no such thing. Although ACT did go on to qualify its results as "preliminary"—the first halting steps in an ongoing effort—it was clear that the company was trying to engineer front-page news out of what could be construed as a scientific non-event.

The announcement did indeed make headlines, but even the mainstream media quickly turned sour. "As pure business hype, the announcement of human cloning by a small biotech startup was a masterpiece," the *San Francisco*

risk. Would I rather have had blastocysts? Sure. Was it thrilling to see at least six cells? Yeah." He paused, and then continued. "Now that the storm has died down, we've got to finish what we started. Mike has gotta get the money, and the rest of us have to finish the work."

"AN INCREDIBLE GIFT TO MANKIND"

Although ACT is adamant that commercial realities had not motivated the announcement, one thing was clear: last fall ACT was not far from going broke. Its scientists were tight-lipped about the situation. When I spoke with Mike West about it, he chose his words carefully. He described the state of affairs as "nerve-racking" and went on to talk about the difficulties of a situation "where you are not making any money, you are losing millions of dollars a year ... and trying to raise money when Congress is trying to criminalize your business."

ACT was running on fumes. It was making payroll at the last minute and funding its human cloning experiments with eleventh-hour investments from friends, or with money from its scientists' own pockets. By October the situation had reached crisis proportions. "The finances were such that much of our research had to be put on hold," Bob Lanza told me.

The company did have a small amount of cash trickling in

from an agricultural subsidiary, however, including a round of investment that came in shortly before the November announcement. In the end the announcement did attract interest from venture-capital firms, but everything hinged on the Senate's upcoming decision, since no one was committing money to a business that might soon be outlawed.

Others in the field weren't particularly encouraging about the company's long-term prospects, even if the work remained legal. "We don't think this is a good business," William Haseltine, the chief executive officer of Human Genome Sciences, in Rockville, Maryland, told me when I asked him about ACT's viability. Haseltine is a pioneer in regenerative medicine (the field that includes human embryonic-stem-cell therapies) and also the editor in chief of *The Journal of Regenerative Medicine*. "I think the government should fund this work," he said. "Private companies can't do it justice ... Therapies using these cells are ten to fifteen years away, and most of these companies will probably be long gone by then. In my opinion, they can't sustain themselves for that long without sales." Tom Okarma is skeptical for a different reason. He thinks that therapeutic cloning is too inefficient and costly ever to achieve commercial success, and calls it a "nonstarter," because, among other reasons, each patient's cells would have to be put through FDA-mandated safety testing individually. (Geron is exploring several other potential solutions to the immune-rejection problem.)

All that said, when asked how the company plans to make money from therapeutic cloning, scientists at ACT are likely to give an impatient response. "I don't care about whether there's commercial value in it," Bob Lanza told me. "You know, the point is that if a mother can give her oocyte and cure her kid from a lifetime of suffering—if you can cure people, you know, screw whether it's commercially viable."

Mike West was confident, although not very specific, about the potential for profit. He told me, "I've heard the criticism, you know, that 'Mike West is just into trying to help people, he's not serious about business.' My philosophy is, cure diabetes and you'll make plenty of money. You see what I'm saying? Don't put the cart in front of the horse. Cure the disease and you'll make money."

The most frequent refrain among political opponents of therapeutic cloning, and of human embryonic-stem-cell research in general, is that adult stem cells are a better choice for the development of medical therapies. Like cells from cloned embryos, adult stem cells are a perfect genetic match for a patient. Unlike embryonic cells, however, they can be found in the tissues of the patient's own body—a fact that prompted Senator Brownback, after ACT's announcement, to insist on CNN that adult-stem-cell research is "a much better route to go." Opponents of therapeutic cloning wonder why there's a need to work with embryonic cells at all, since adult stem cells aren't rejected by

the immune system, can produce a wide variety of body tissues, and do not require destroying embryos.

A report released by the NIH last July provided some answers, pointing out that most adult stem cells are rare, may be difficult or dangerous to harvest from patients, and have a limited capacity to divide in the laboratory, which means that they can't yet be grown in large enough quantities to be of therapeutic value. What's more, adult stem cells have not been found for all types of tissue.

Still, if any type of adult stem cell has proven its clinical promise, it is the HSCs in bone marrow—the same cells needed for Trevor Ross. Clinicians have been doing bone-marrow transplants involving these cells for more than thirty years, and have been able to help cancer patients, correct anemias, and even reboot the immune system to provide respite from auto-immune diseases such as systemic lupus, multiple sclerosis, and rheumatoid arthritis. Some clinicians who work with adult HSCs on a daily basis, however, think that therapeutic cloning could do even better. One of them is Malcolm Moore, a specialist in blood-cell development at the Memorial Sloan-Kettering Institute, in Manhattan. Moore is among the scientists collaborating with ACT on therapeutic-cloning experiments in animals. "We want to improve the whole strategy of bone-marrow transplantation," he told me when I visited him in his office, which overlooks East Sixty-seventh Street. If anyone knows the promise of adult hematopoietic stem cells, it's Moore, who for thirty years has been working to optimize their use in treating cancer patients whose bone marrow has been destroyed by chemotherapy. But Moore points out that giving patients back their own adult stem cells is not always an ideal therapy. In cancer patients these cells are sometimes damaged by early rounds of chemotherapy or contaminated with cancer cells that are difficult to purify away. In a patient like Trevor the cells have a genetic defect that gene-therapy techniques are still far too experimental to treat effectively. And in all cases adult stem cells suffer from a major limitation: cellular aging.

It comes down to a simple fact about cell division: skin cells, heart cells, liver cells, even adult stem cells, can divide only so many times—perhaps fifty to a hundred—before burning themselves out. It's as if some biological counter were tallying rounds of cell division with the help of structures called telomeres. Telomeres are repeated sequences of DNA that cap and protect the ends of each of our chromosomes, much like the plastic tips that protect the ends of a shoelace. The problem is that each time a cell divides, its telomeres grow shorter. Eventually they grow so short that the cells reach a state of senescence in which they simply stop dividing or die. Cells in the reproductive lineage, however, including human embryonic stem cells, escape this fate. They have high levels of the enzyme telomerase, which extends and maintains telomeres as the cells divide, making them immortal in a cellular sense. Human embryonic stem cells can

A black and white photograph of a woman with long hair, wearing a plaid shirt, leaning over the hood of a car. She is holding a dipstick and appears to be checking the oil level. The background is dark and out of focus.

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A typical bone-marrow transplant, Moore told me, replaces only one or two percent of a patient's HSCs, and relies heavily on that small handful of cells to divide. The cells' telomeres have already shortened significantly, over years and years of use, and now those same cells are being asked to repopulate entire blood and immune systems. This means more-frequent cell division and, consequently, a faster shortening of telomeres. It is accelerated aging on a cellular level.

In the short term, Moore said, that's no cause for concern. But later in life there may be consequences. For example, a forty- or fifty-year-old who had received a transplant earlier in life might essentially have the immune system of a seventy- or eighty-year-old. (This and other limitations of adult stem cells may be overcome with further research.)

A patient's skin cell used for cloning has telomeres already shortened by years of cell division, but ACT's scientists have demonstrated that a cell's life-span is completely restored through cloning. In a paper published in *Science* in April of 2000, researchers at ACT showed that cloning can restore a senescent cell's telomeres to an embryonic length or greater. As a result, therapeutic cloning can produce cells with their whole "lives" ahead of them, thus providing "youthful" tissue that may in some cases respond better to injury or disease than adult cells would.

"When there's this ethics debate about adult versus embryonic stem cells and cloning," Mike West told me, "I don't think what's properly weighed in the balance is the amazing breakthrough that this is. I mean, the idea that you can take a person of any age—a hundred and twenty years old—and take a skin cell from them and give them back their own cells that are young! Cells of any kind, with any kind of genetic modification! That's such an incredible gift to mankind! For the U.S. Congress to spend two hours and debate this and say, 'Oh, we'll make all this illegal,' to me is unbelievable. They don't understand." He shook his head. "We've never been able to do anything like this before."

Malcolm Moore's main concern is that Congress will shut the door on this research before its full benefits are known—if they indeed exist. "Basically," he told me, "my plea is, don't close down an avenue of research that might be of value in the future in the treatment of human disease. Time, science, and medical practice will be the ultimate proofs of whether these strategies are going to benefit mankind."

Bob Lanza put things more enthusiastically. "I'd stake my life on it," he said. "If this research is allowed to proceed, by the time we grow old, this will be a routine thing." He pounded the table we were sitting at, for emphasis. "You'll just go and get a skin cell removed at the doctor's office, and they'll give you back a new organ or some new tissue—a new liver, a new kidney—and you'll be fixed. And it's not science fiction. This is very, very real."

BREACHING THE ZONA PELLUCIDA

On January 29, the night of the State of the Union address and a week after Jose Cibelli and I had fruitlessly traveled to the fertility clinic outside Boston, we again found ourselves sitting at the Starbucks, waiting for the results of another retrieval attempt. "I'm just hoping we get enough eggs," Cibelli said. "About ten. At least ten." A few minutes later his cell phone rang. The procedure was finished. Cibelli hung up and told me, "She didn't say how many."

Inside the clinic Cibelli waved at the embryologist, who was seated at a microscope on the other side of a glass wall. She was wearing a surgical blue-paper hat and gown, and was scanning a dish of fluid retrieved from the egg donor's ovaries, trying to locate eggs. She shook her head sadly at Cibelli and held up just two fingers. "Part of the game," he said, sinking into a chair. He leaned his head back against the wall and tapped his feet nervously. The embryologist continued her search.

In human embryology timing is everything. By the time an egg is collected, it has already started to age; it will lose its viability in the lab within a few hours. The older the egg, the harder fusing it with a skin cell becomes, and the shorter the likely development of any embryo it forms. Since the cloning procedure itself can take several hours, Cibelli had started asking the clinic for "younger" eggs, collected closer to the time of a donor's last hormone injection. Go in too soon, however, and an egg is too immature to be retrieved. It won't yet have entered the fluid-filled space of its ovarian follicle and will stay behind when the surgical team collects the fluid. This day's egg retrieval had been an experiment—collection had been attempted three hours earlier than usual.

"Well, I'm all done doing experiments," the embryologist said with good-natured exasperation, removing a white mask from over her nose and mouth as she came to talk to Cibelli. She and her team had taken fluid from more than a dozen follicles, but had found only two mature eggs. They'd gone in too early.

Two eggs weren't much to work with. Mice are the only animals with which scientists have reported doing therapeutic cloning from start to finish—and so far the numbers are pretty grim. A group at Rockefeller University, in New York, made 1,016 cloning attempts but got only 398 blastocysts, which yielded only thirty-five stem-cell lines. That's one stem-cell line for every twenty-nine eggs. For a team at the Whitehead Institute for Biomedical Research, in Massachusetts, the process was even more inefficient. They started with 202 eggs and produced only one cloned stem-cell line. A team at Monash University, in Australia, consumed 926 eggs to produce a stem-cell line. To get one from just two eggs would require a minor miracle.

If it were up to Cibelli, he would be doing cloning procedures every week, lining up two or three donors for each collection day in case one dropped out or an egg collection

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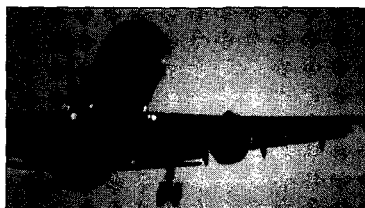
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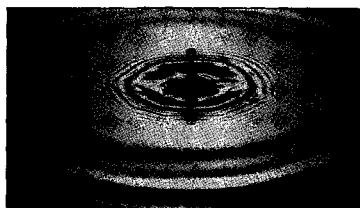
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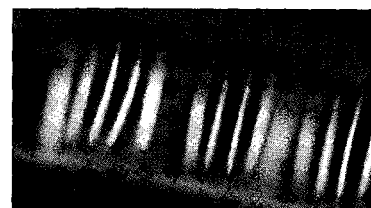
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failed. ACT had no money in the bank, however, and it was unclear when he was going to be able to schedule the next donor. "And the logistics," Cibelli said to me in frustration. "You have no idea how difficult it is to do this whole thing. We need to find an alternative to human eggs." Still, he was trying to remain optimistic. "I keep thinking about Bob Edwards," he said, referring to the physician who created the first test-tube baby. "He got Louise Brown with only one embryo. He only got one embryo that day."

Cibelli winced. "Two!" he said.

When we arrived back at ACT that night, the only sound was the whir of a vacuum cleaner as the cleaning crew finished up in a hallway. The technician, whom I'll call Kate, was waiting for us in the lab. She was wearing a baseball cap and a white lab coat over jeans with rolled-up cuffs. Cibelli handed her a small vial containing the two eggs; each was going to get its full share of attention. "We can name them," Cibelli said jokingly. Kate moved the eggs to a drop of culture medium at the bottom of a clear plastic dish, and then covered the drop with a layer of oil, to maintain the pH of the medium and prevent evaporation. She examined the eggs through the microscope. "They look good," she said. She flipped on a video monitor so that we could see what she saw.

The zona of a human egg is rubbery and resilient. Kate would use a machine called a piezo device to make the glass needle vibrate at a high frequency, so that it could tunnel through the zona. Moments earlier she had practiced a few times on a cow egg, withdrawing the needle and spitting out the plug of zona with each pass.

"I suppose while my luck is good I should give it a shot," she said nervously. "Lights, please." Cibelli flipped off the overhead lights so that she could see the field under the microscope more clearly. The rest of us watched the monitor. Keeping the lights low also protects the eggs—the culture medium responds badly to fluorescents and can change in a way that starts to damage the cells it contains.

To make it easier to locate the egg's chromosomes, Kate had soaked each egg in a dye that binds to DNA and shows up blue under ultraviolet light. She stepped briefly on what looked like a small sewing-machine pedal on the floor, and a UV light popped on under the microscope. On the monitor the egg's chromosomes winked into view, standing out like a blue neon sign in a diner's window. They were fat and compact, lined up in "metaphase II"—the state in which an egg sits patiently and waits for the entry of a sperm cell.

Kate released the egg from the holding pipette and, using the needle, rotated it, trying to find the most direct path to

AS LONG AS THE FEDERAL-FUNDING BAN REMAINS IN PLACE, THOSE MOST LIKELY TO PURSUE THERAPEUTIC-CLONING RESEARCH WILL BE COMPANIES, LIKE ACT, THAT ARE INEVITABLY BEDEVILED BY THE NEED TO RAISE MONEY, GENERATE BUZZ, AND PLEASE INVESTORS.

Magnified many times over, a human egg is perfectly round, and as luminous and mesmerizing as the moon. This one glowed slightly golden and slightly grainy in the light from the microscope. Surrounding the egg is a thick capsule called the zona pellucida—the closest thing a human egg has to a shell. Unlike a chicken-egg shell, for instance, the zona is flexible, and not attached to the egg itself. Instead the egg floats free within it on a thin cushion of fluid. In two dimensions on the video screen, the zona played moon ring to the egg's glowing moon. Although this is among the largest cells in a human body, it is still smaller than a grain of sand.

Kate's first step was to remove each egg's chromosomes. To anchor the first egg in place during the procedure, she had gently applied suction to it with a blunt glass tube called a holding pipette, which we could see on the left-hand side of the video screen. It was about as wide as the egg itself and was firmly suctioned onto the zona. Using a high-tech joystick mounted at the right of her microscope, she moved a much thinner glass tool (officially known as a micropipette, but called a "needle" by ACT's scientists) toward the egg in minuscule increments. The needle is hollow and somewhat like a drinking straw—by changing the vacuum pressure at its end, one can draw things up into it or spit them back out.

its chromosomes. After anchoring the egg again, she gently nudged the tip of the needle up to the zona pellucida. The sound of the piezo device filled the room—a tinny, mechanical buzzing. On the monitor we watched the needle advance, drilling a plug out of the zona. Kate hit the UV pedal intermittently, checking for the position of the chromosomes while also trying to minimize the egg's exposure to potentially damaging UV rays. Soon the needle was through the zona and poised at the surface of the egg itself, just across the outer membrane from the chromosomes. She applied a little suction. We all held our breath. It was a moment when things could go terribly wrong.

In theory, at this point in the procedure the suction draws a small portion of the egg up into the needle, bringing the chromosomes along with it. That small portion then buds off, leaving the egg's outer membrane (greasy and fluid, like all cell membranes) to flow together and repair the hole. With cow eggs the bud pinches off rather cleanly. But human eggs are trickier. Their membranes stretch, trailing a thin thread behind. ("It's like a string of mozzarella on a pizza that doesn't break and doesn't break," Cibelli told me.) A tiny mistake with the joystick, and the needle will leave a gaping tear in the egg.

It was one of those moments that drive scientists to

wear amulets and recite superstitious incantations. Cibelli was so anxious that he was now sitting on the floor, his head leaning back against the door to the room and his knees pulled up in front of him.

Kate began to coax the egg's cytoplasm into the needle. But the chromosomes didn't budge. She applied a little more suction, but they still didn't move. "Come on," she muttered. Finally the chromosomes wavered and then slid slowly into the needle. Using the UV pedal as she retracted the needle carefully from the egg, she checked to make sure that the chromosomes were still in the tube. "Slowly," Cibelli warned. On the monitor the egg cell's membrane, stretching between the body of the egg and the small portion in the needle, looked like a strand of spider's silk studded with dew. The bud pinched off, and Cibelli shouted, "You got it!"

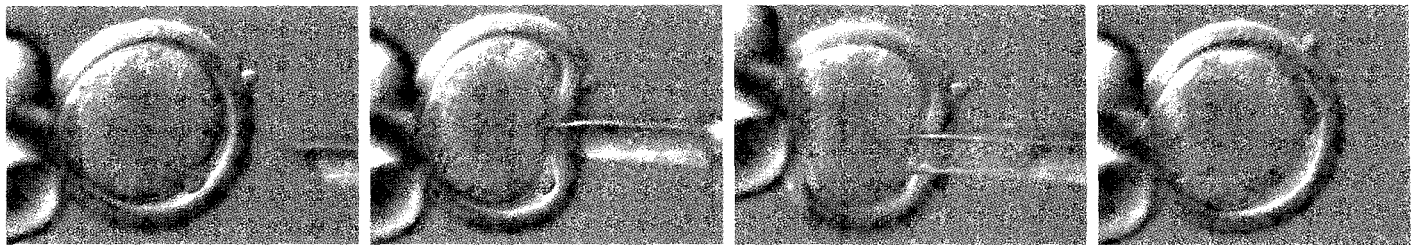
The eviscerated egg was now ready for its unusual cargo: one of Trevor Ross's skin cells.

If and when Trevor's skin cell fused with the empty egg, what exactly was going to be created? "You are creating people," Sam Brownback has insisted. "You're creating humans." Opponents of therapeutic cloning believe that embryos deserve governmental protection before they have

of tissue will produce is entirely unclear. During the first two weeks of development one embryo can still split into two, a process that produces identical twins. Remarkably, two embryos can also fuse into one, eventually resulting in a single person whose body is a patchwork of two genotypes (with each eye a different color, perhaps, or mottled, two-tone skin). Not until the appearance of the primitive streak are the beginnings of a human individual sketched out. At that point, according to West, "There is no brain, no sensation, no pain, no memory, nothing of that. But it is an individualized human in a very early stage, and I advocate we don't touch that. But before then—they're wrong. It is just cells. It is a kind of raw material for life: the cellular life out of which human life arises."

West's line of thinking is fully consistent with the conclusions laid out by the NIH Human Embryo Research Panel in 1994. "If the President and members of Congress really understood what these little balls of cells were," West went on, "they would have a completely different view."

Adrienne Ross has a blunter assessment. "To me," she told me, "it's like, how dare they tell me that I cannot save my son's life? It's as simple as that. You know, if you want to practice your religion, practice your religion. But not



A cow egg is held by a glass pipette (left side of each frame) while a glass "needle" is used to remove its genetic material

even divided from one cell into two (although not even the world's major religions agree on when a human life begins).

Positions like Senator Brownback's frustrate Mike West. "I'm just very disappointed," he said to me. "I'm sad, because even the critics admit that millions of human beings and their fate in the hospital may be contingent on this research." As a young man, West was an evangelical Christian and a creationist. He protested outside abortion clinics. But swayed by the scientific evidence for evolution, he eventually abandoned the biblical view of creation. Science now dictates his view of the earliest human embryos as well. "You can be as pro-life as you can get," he told me, "but you can't say that making and destroying a pre-implantation embryo is the destruction of a human. Because it isn't. If it was a human life, I wouldn't touch it. Absolutely not." He went on, "A human individual does not begin at conception. It begins at primitive-streak formation."

The "primitive streak" appears after fourteen days of embryonic development in utero. It's like an arrow drawn on the embryo, one that delineates head and tail, front and back. Until then how many individuals, if any, that tiny ball

when it interferes with other people's lives." She continued, "They're telling me, 'Let your child die, because my religious belief is more important than your child's life.' They can make their choices for their own embryos and they can make their choices for their own children. But they have no right to stop me from saving my son's life."

A SHOT IN THE DARK

In the cloning lab Kate had added several of Trevor Ross's skin cells to the droplet of medium that contained the egg she had just worked on. The cells floated in the solution, a hundredth the size of the egg itself. She drew a promising-looking cell up into the needle, slipped it through the tiny window already drilled in the egg's zona, and deposited it between the egg and the zona. She nudged the zona with the needle, trying to push the egg and the skin cell into contact, but apparently without luck. Kate frowned. "Let me get a better angle," she said, rotating the egg a little, after which she could see that the cells were touching ever so slightly.

Contact was essential, because the plan was to fuse the

two cells with a pulse of electricity. Electricity also helps to “activate” the egg—a process, normally performed by sperm, that kick-starts embryonic development. ACT had tried fusing human cells only once before this—and all the eggs had died. Cibelli was apprehensive. “Fusion is kind of a shot in the dark,” he told me. “There’s nothing you can do with your hands, like going in mechanically and taking the chromosomes out. Here you have to rely on physics.”

Before the fusion attempt, Kate repeated the entire extraction procedure with the other egg. Everything went smoothly, and this time she was able to tuck a skin cell securely between the egg and its zona, with lots of contact. “Yeah! Nice!” she exclaimed, giving a thumbs-up and looking at Cibelli. “See? See?” she said.

She turned the operation over to Cibelli. “Okay,” she said, beginning an incantation: “Please fuse. Please fuse. Please fuse.” She ran both hands over her face. “Who’d think two eggs could be so stressful?”

Cibelli set up at a second microscope—a much simpler one, designed to provide basic illumination from below. On the microscope platform he placed a fusion chamber—a round, shallow plastic dish with two wires lined up along the bottom, separated by a gap of only half a millimeter. He would soon place the eggs, one at a time, between these two wires. He rolled up his sleeves and attached a black lead to one electrode and a red lead to the other, completing the circuit. Then he did a test on the electrical-pulse generator that had been wheeled up beside him on a stainless-steel cart. “Let’s play it safe,” he said and set the generator for a pulse of ninety volts. Kate asked, “What do you think about being a little bit on the high side for this one, and the second one we drop it down to eighty?” Cibelli agreed and then placed the first of the two eggs in the fusion chamber. Under the microscope the egg looked good—round, with uniform cytoplasm and a healthy space between it and its zona.

If for some reason the egg and the skin cell didn’t fuse, there was always plan B: isolating the skin cell’s nucleus—the crucial packet containing its DNA—and injecting it directly into the egg. Another member of the cloning team, an expert in injection, was standing by in case this became necessary. But Cibelli was hoping not to have to resort to injection. Isolating a nucleus requires strong handling. “I’m always concerned that will be detrimental,” Cibelli said. “We’re not sure which method is going to be the one that is going to pay off. Too many things to try, and too few eggs!”

Using a tiny glass rod shaped like a miniature fencing foil, with a bulbous tip that can prod without piercing, Cibelli positioned the egg between the two electrodes at the bottom of the dish. His goal was to line it up so that the wires would send maximum current directly through the two cells, pushing them toward each other and confusing their membranes enough to make them fuse. Too little current and the cells wouldn’t fuse; too much and the egg

would be “fried,” so to speak. With cow eggs the parameters had been well worked out, but with human cells it wasn’t clear how much current was best.

If all went well with the cloning procedure, the nucleus of the reconstructed egg would have enlarged dramatically by the next morning. The genes that made the skin cell a skin cell would be silenced; others that had been laid away unneeded would be unpacked; and the genes that initiate early embryonic development would be activated. The process is not well understood, however, and frequently goes awry—which is one reason for the oft-cited fact that it took 277 cloning attempts to produce just one Dolly.

Cibelli flipped the switch, and a mechanical beep sounded as the machine sent a pulse of electricity through the cells. Everybody waited as Cibelli looked through his microscope. There was no camera mounted on this microscope, so only he could see what was going on. “How’d it do?” Kate asked.

“The cell is running away from the egg,” he said.

“What?!” she said. “It’s not supposed to do that.”

Quickly they gave the second egg its pulse of electricity, so that they could then examine both closely.

“I don’t see the zona,” Cibelli said, peering at one egg. Kate took a look through the microscope. Each egg’s zona had disappeared. This had never happened before. “They had a zona before,” she said. “Where’d it go?”

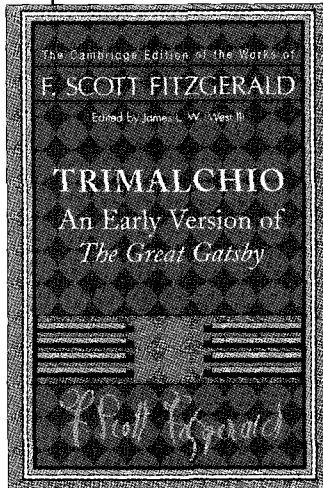
“I don’t think we got fusion,” Cibelli said to Kate. They took a few minutes to load both eggs up again with DNA-binding dye, and then checked them with UV light under the other microscope. “There’s no DNA, for sure,” Cibelli said. “There’s nothing there. There’s no DNA.”

We all stared at the eggs, which now glowed implacably on the video monitor. Without a zona, the eggs were completely unusable. Twenty-two thousand dollars and three months of waiting had apparently come to naught. The team couldn’t try fusion again, because without a zona there was nothing to hold a skin cell in contact with an egg. They couldn’t try injection either, because the technique requires anchoring an egg in one place with the holding pipette while a skin-cell nucleus is inserted. The zona’s resilience makes it easy to grab with the pipette, but the egg inside is much more delicate. A holding pipette might well simply suck up the egg, destroying it in the process.

The team conferred briefly and came up with a last-ditch plan to save the eggs: using zonas from the cow eggs left over in the cow-cloning lab next door. Within half an hour Kate had vacuumed the eggs out of four or five cow zonas using a much bigger needle. The plan at this point was to suck the human eggs up into this needle and transfer them into empty cow zonas. “Well, if it works, it works,” she said, “and if it doesn’t, we’re going to kill them.”

She tried pulling one of the eggs up into the needle, with no luck—its outer membrane ruptured, and cytoplasm rushed through the tear. Kate groaned. “It lysed. Shoot.”

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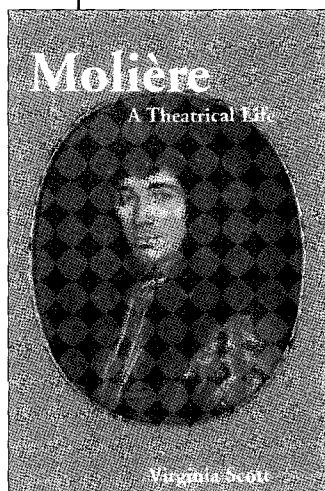
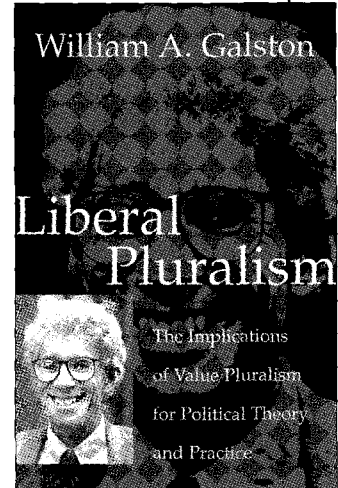
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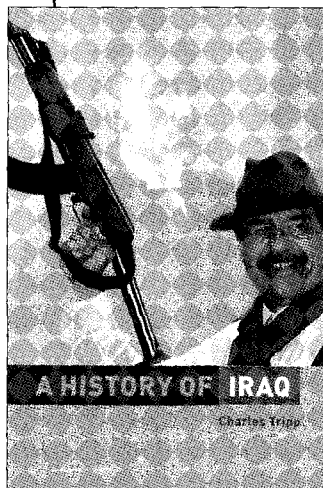
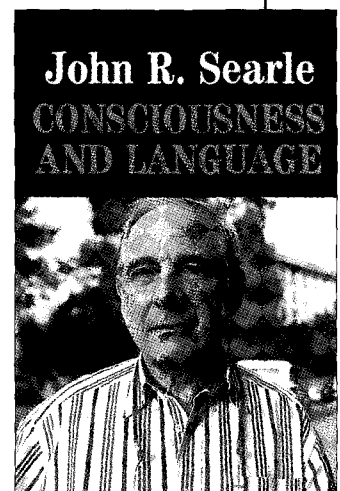
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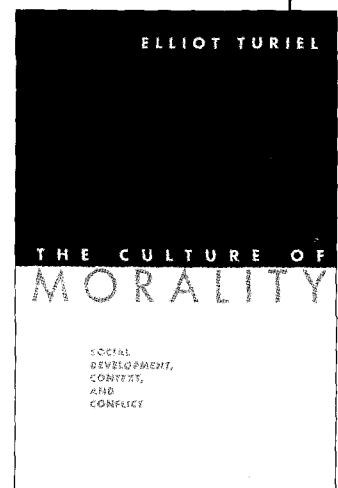
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Looking at Cibelli apprehensively, she asked, "What do you think? Should I try the other one?" He nodded.

With the second egg she proceeded more slowly. As suction drew it into the needle, the egg elongated and distorted beyond all recognition. "It isn't going to like this at all," Kate said. When the egg had inched all the way into the tube, she moved it over to the empty cow zona and began extruding it. As the egg exited the tube, it began to resume its normal round shape.

"Oh, I don't know, Jose, I think this doesn't look good," Kate said.

"Keep going, you can do it," Cibelli replied.

The egg was almost all the way out of the tube, almost safe in the zona, when it suddenly burst. Cytoplasm flooded the microscope field. Everybody in the room let out an anguished yell.

"You tried," Cibelli said to Kate. "Okay, party's over."

It was midnight, and the dispirited team began breaking down the equipment. "We'll have more eggs," Cibelli said, to nobody in particular. "Hopefully, anyway."

This past January, as ACT's scientists were preparing to work with Trevor Ross's skin cells, a newly created presidential advisory group known as the Council on Bioethics met for the first time. President Bush had created the panel to advise him on controversial matters such as stem-cell research and cloning. "You can help be the conscience of the country," the President told his new advisers, adding that they would "help people ... come to grips with how medicine and science interface [with] the dignity of life, and the notion that life is—you know, that there is a Creator."

Bush's remarks set off alarm bells in the scientific community. So did the composition of the council. Expressing a widely held view, a prominent bioethicist, Arthur Caplan, wrote in an editorial that the new bioethics council was "stacked" with members likely to support the President's opposition to cloning research of any kind. More generally, he argued that the council "will rely on religious rather than secular principles to navigate its course."

At this writing the fate of therapeutic-cloning research remains uncertain. A complete ban in the United States is a distinct possibility. At the end of March the President signaled his ongoing opposition to human embryo research of almost any kind by describing Elias Zerhouni, his highly respected new nominee to head the National Institutes of Health, as a man who "shares my view that human life is precious and should not be exploited or destroyed for the benefits of others." And the Bush Administration even appeared to have international aspirations for its anti-cloning agenda: in February a U.S. delegate to the United Nations proposed a "global and comprehensive" ban on all human cloning research.

That proposal met with firm opposition, however, from

other countries. In large part this was because therapeutic-cloning research like that being done at ACT is already under way elsewhere around the world. Britain's House of Lords, for instance, has given the go-ahead for therapeutic-cloning research to proceed, with government oversight and funding. And researchers in China claim that they have used therapeutic-cloning techniques to create human blastocysts, and that they have isolated stem cells from embryos created using human cells and rabbit eggs.

In the United States the broad consensus in the scientific community is that therapeutic-cloning research merits significant exploration, and that real progress is likely only with government funding and support. "Such research," Harold Varmus, the former NIH director, wrote last year in *The New York Times*, "is vital not just to biotechnology companies and their investors, but to the nation as a whole. By structuring our system so that only those with private funds or a commercial motive do this pioneering work, we curb our full capacity to expand our scientific understanding." To put it another way: as long as a federal-funding ban remains in place, the organizations most likely to move forward with therapeutic-cloning research will be companies like ACT—which, despite generally noble intentions, are bedeviled by the need to raise money, generate buzz, and please investors.

Last summer, in recognition of the importance of government support (but with considerable reluctance), Bush announced a small exception to the federal-funding ban: he authorized federal funds for work with a limited number of human embryonic-stem-cell lines already in existence. But he quickly went on to point out that the government would not fund experiments involving the further destruction of embryos. Cells later obtained from embryos—which would include, obviously, cloned embryos—would remain off limits to federally funded scientists. And Congress may, of course, end up banning cloning research altogether.

What is clear is that the potential fruits of therapeutic-cloning research will not come soon enough for Trevor Ross. In February, doctors detected the first signs of childhood cerebral onset of ALD. All hopes of developing an experimental cure for Trevor were dashed; time had run out. The Rosses immediately scheduled a more traditional cord-blood transplant, fully aware of the risks and of the odds of failure. ▀

Kyla Dunn, a former biotech researcher, has been an associate producer and reporter on documentaries for the PBS investigative series Frontline and for CBS's 60 Minutes II. Her writing has appeared in The Washington Post.

OPPOSITE: A former poet laureate of the United States, Robert Pinsky has published numerous books of criticism and poetry, most recently Jersey Rain (2000). The Lords of Mistrule, a new collection of poetry by X. J. Kennedy, will be published in September. W. S. Merwin is the author of more than forty works of poetry, translation, and nonfiction. His most recent collection of poems is The Pupil (2001). Juan Carlos Galeano teaches Latin American poetry at Florida State University. His poems have appeared in Parnassus, TriQuarterly, and Ploughshares. The poet and translator Angela Ball teaches creative writing at the University of Southern Mississippi. Her most recent collection is The Museum of the Revolution (1999).

PLURALS

.....

JAR OF PENS

Sometimes the sight of them
Huddled in their cylindrical formation
Repels me: humble, erect,
Mute and expectant in their
Rinsed-out honey crock: my quiver
Of detached stingers. (Or, a bouquet
Of lies and intentions unspent.)

Pilots, drones, workers—the Queen is
Cross. Upright lodge
Of the toilworthy—gathered
At attention as though they know
All the ink in the world couldn't
Cover the first syllable
Of a heart's confusion.

This fat fountain pen wishes
In its elastic heart
That I were the farm boy
Whose illiterate father
Rescued it out of the privy
After it fell from the boy's pants:
The man digging in boots
By lanternlight, down in the pit.

Another is straining to call back
The characters of the five thousand
World languages dead since 1900,
Curlicues, fiddleheads, brushstroke
Splashes and arabesques,
Footprints of extinct species.

The father hosed down his boots
And leaving them in the barn
With his pants and shirt
Came into the kitchen,
Holding the little retrieved
Symbol of symbol-making.

O brood of line-scratchers, plastic
Scabbards of the soul, you have
Outlived the sword—talons and
Wingfeathers for the hand.

—ROBERT PINSKY

A BEARD OF BEES

at the farmers' market

The arbor of his chin
Bedangled with a cluster
Of yellow grapes that buzz
Like an electric razor,
This raiser of honeybees
With face in half-eclipse
Coaxes some hairs aside
To clear space for his lips.

He's a master of close shaves.
How well he does one thing,
With what abandon braves
Disaster's sting,
Quite unlike refugees
Crossing a perilous sector.
A whirl—his moustache flies
Away in search of nectar.

—X. J. KENNEDY

TO MY TEETH

So the companions
of Ulysses those that were
still with him after
the nights in the horse the sea lanes
the other islands the friends
lost one by one in pain
and the coming home one
bare day to a later
age that was their own
but with their scars now upon them
and now darkened and worn and some
broken beyond recognition
and still missing the ones
taken away from beside them
who had grown up with them
and served long without question
wanting nothing else

sat around in the old places
across from the hollows
reminding themselves
that they were the lucky ones
together where they belonged

but would he stay there

—W. S. MERWIN

HERONS

The fishermen who scale and gut their catch
find a river in the bellies of the fish.

In the river shines a beach where some boys play soccer.

Some herons come to the beach to take off their feathers and go for a swim.

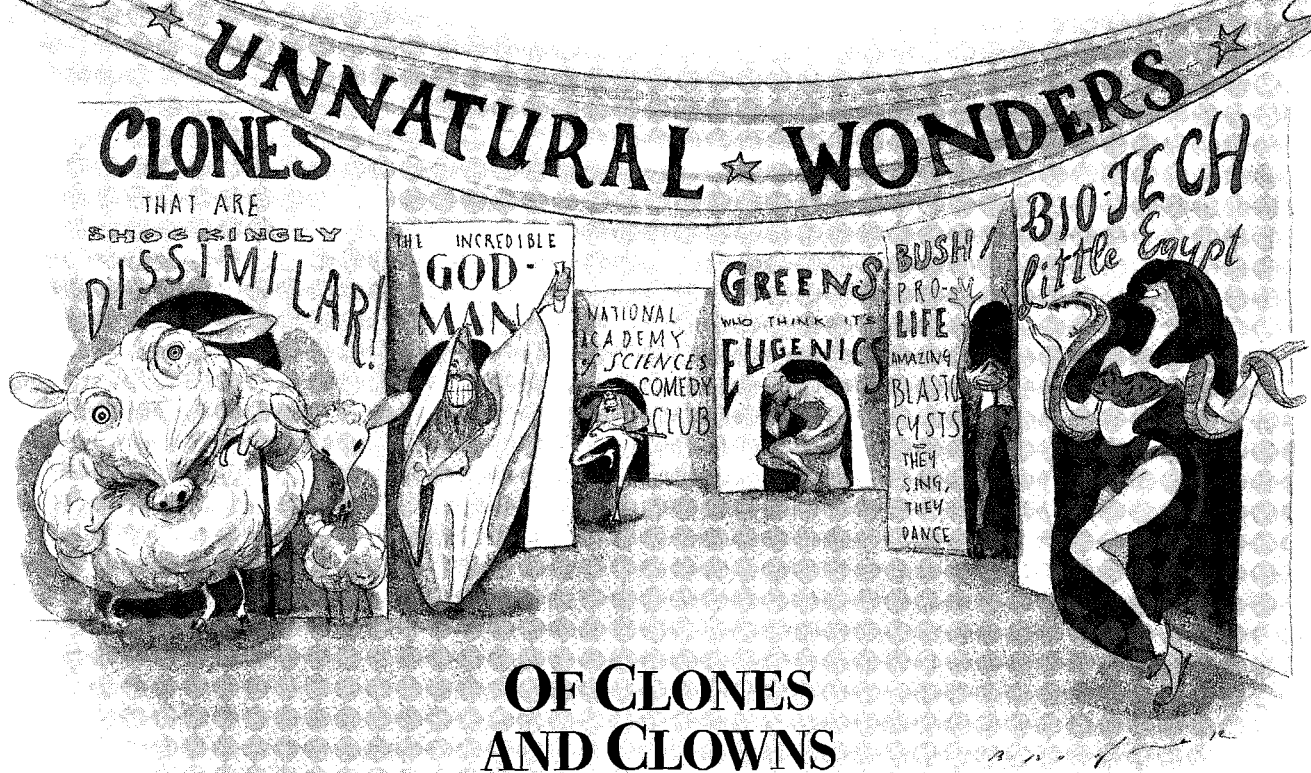
The fishermen wink at the boys,
urging them to bathe with the herons.

But the boys prefer to hide the herons' clothes.

Then those who scale and gut their fish
laugh so hard they fall down, choking.

The herons dress themselves in the scales of the fish and dive into the river.

—JUAN CARLOS GALEANO, *translated by Angela Ball*



OF CLONES AND CLOWNS

A distinguished molecular biologist discusses the “cloning circus” and the damage it is doing to serious research

BY ROBERT A. WEINBERG

Illustration by Steve Brodner

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Biologists have been rather silent on the subject of human cloning. Some others would accuse us, as they have with predictable regularity in the recent past, of insensitivity to the societal consequences of our research. If not insensitivity, then moral obtuseness, and if not that, then arrogance—an accusation that can never be disproved.

The truth is that most of us have remained quiet for quite another reason. Most of us regard reproductive cloning—a procedure used to produce an entire new organism from one cell of an adult—as a technology riddled with problems. Why should we waste time agonizing about something that is far removed from practical utility, and may forever remain so?

The nature and magnitude of the problems were suggested by the Scottish scientist Ian Wilmut’s initial report, five years ago, on the cloning of Dolly the sheep. Dolly represented one success among 277 attempts to produce a viable, healthy newborn. Most attempts at cloning other animal species—to date cloning has succeeded with sheep, mice, cattle, goats, cats, and pigs—have not fared much better.

Even the successes come with problems. The placentas

of cloned fetuses are routinely two or three times larger than normal. The offspring are usually larger than normal as well. Several months after birth one group of cloned mice weighed 72 percent more than mice created through normal reproduction. In many species cloned fetuses must be delivered by cesarean section because of their size. This abnormality, the reasons for which no one understands, is so common that it now has its own name—Large Offspring Syndrome. Dolly (who was of normal size at birth) was briefly overweight in her young years and suffers from early-onset arthritis of unknown cause. Two recent reports indicate that cloned mice suffer early-onset obesity and early death.

Arguably the most successful reproductive-cloning experiment was reported last year by Advanced Cell Technology, a small biotech company in Worcester, Massachusetts. Working with cows, ACT produced 496 embryos by injecting nuclei from adult cells into eggs that had been stripped of their own nuclei. Implanting the embryos into the uteruses of cows led to 110 established pregnancies, thirty of which went to term. Five of the newborns died shortly after birth, and a sixth died several months later.

The twenty-four surviving calves developed into cows that were healthy by all criteria examined. But most, if not all, had enlarged placentas, and as newborns some of them suffered from the respiratory distress typical of Large Offspring Syndrome.

The success rate of the procedure, roughly five percent, was much higher than the rates achieved with other mammalian species, and the experiment was considered a great success. Some of the cows have grown up, been artificially inseminated, and given birth to normal offspring. Whether they are affected by any of the symptoms associated with Large Offspring Syndrome later in life is not apparent from the published data. No matter: for \$20,000 ACT will clone your favorite cow.

Imagine the application of this technology to human beings. Suppose that 100 adult nuclei are obtained, each of which is injected into a human egg whose own nucleus has been removed. Imagine then that only five of the 100 embryos thus created result in well-formed, viable newborns; the other ninety-five spontaneously abort at various stages of development or, if cloning experiments with mammals other than cows are any guide, yield grossly malformed babies. The five viable babies have a reasonable likelihood of suffering from Large Offspring Syndrome. How they will develop, physically and cognitively, is anyone's guess. It seems unlikely that even the richest and most egomaniacal among us, intent on recreating themselves exactly, will swarm to this technology.

Biological systems are extraordinarily complex, and there are myriad ways in which experiments can go awry or their results can be misinterpreted. Still, perhaps 95 percent of what biologists read in this year's research journals will be considered valid (if perhaps not very interesting) a century from now. Much of scientists' trust in the existing knowledge base derives from the system constructed over the past century to validate new research findings and the conclusions derived from them. Research journals impose quality controls to ensure that scientific observations and conclusions are solid and credible. They sift the scientific wheat from the chaff.

The system works like this: A biologist sends a manuscript describing his experiment to a journal. The editor of the journal recruits several experts, who remain anonymous to the researcher, to vet the manuscript. A month or two later the researcher receives a thumbs-up, a thumbs-down, or a request for revisions and more data. The system works reasonably well, which is why many of us invest large amounts of time in serving as the anonymous reviewers of one another's work. Without such rigorously imposed quality control, our subfields of research would rapidly descend into chaos, because no publicly announced result would carry the imprimatur of having been critiqued by experts.

We participate in the peer-review process not only to

create a sound edifice of ideas and results for ourselves; we do it for the outside world as well—for all those who are unfamiliar with the arcane details of our field. Without the trial-by-fire of peer review, how can journalists and the public possibly know which discoveries are credible, which are nothing more than acts of self-promotion by ambitious researchers, and which smack of the delusional?

The hype about cloning has made a shambles of this system, creating something of a circus. Many of us have the queasy feeling that our carefully constructed world of science is under siege. The clowns—those who think that making money, lots of it, is more important than doing serious science—have invaded our sanctuary.

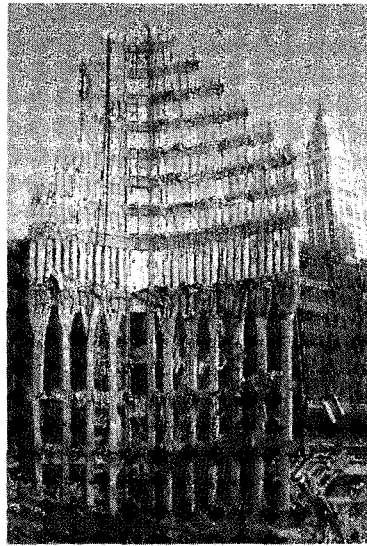
The cloning circus opened soon after Wilmut, a careful and well-respected scientist, reported his success with Dolly. First in the ring was Richard Seed, an elderly Chicago physicist, who in late 1997 announced his intention of cloning a human being within two years. Soon members of an international religious cult, the Raëlians (followers of Claude Vorilhon, a French-born mystic who says that he was given the name Raël by four-foot-high extraterrestrials, and who preaches that human beings were originally created by these aliens), revealed an even more grandiose vision of human cloning. To the Raëlians, biomedical science is a sacrament to be used for achieving immortality: their ultimate goal is to use cloning to create empty shells into which people's souls can be transferred. As a sideline, the Raëlian-affiliated company Clonaid hopes to offer its services to couples who would like to create a child through reproductive cloning, for \$200,000 per child.

Neither Seed nor the Raëlians made any pretense of subjecting their plans to review by knowledgeable scientists; they went straight to the popular press. Still, this wasn't so bad. Few science journalists took them seriously (although they did oblige them with extensive coverage). Biologists were also unmoved. Wasn't it obvious that Seed and the Raëlians were unqualified to undertake even the beginnings of the series of technical steps required for reproductive cloning? Why dignify them with a response?

The next wave of would-be cloners likewise went straight to the mainstream press—but they were not so easily dismissed. In March of last year, at a widely covered press conference in Rome, an Italian and a U.S. physician announced plans to undertake human reproductive cloning outside the United States. The Italian member of the team was Severino Antinori, a gynecologist notorious for having used donor eggs and *in vitro* fertilization to make a sixty-two-year-old woman pregnant in 1994. Now he was moving on. Why, he asked, did the desires of infertile couples (he claimed to have 600 on a waiting list) not outweigh the concerns about human cloning? He repeatedly shouted down reporters and visiting researchers who had the temerity to voice questions about the biological and ethical problems associated with reproductive cloning.

ANNOUNCING

AMERICAN GROUND: Unbuilding the World Trade Center



Within days of the destruction of the World Trade Center, *The Atlantic Monthly* committed itself to report on the gargantuan recovery and cleanup effort just then getting under way. Work at the site would be challenging and complex, and of enduring importance to the United States. William Langewiesche, an *Atlantic* correspondent with experience in other war zones, was immediately dispatched to Manhattan.

When *The Atlantic* approached the City of New York, officials in the mayor's office and those running the World Trade Center cleanup decided to invite Langewiesche into the inner circles of the operation. They gave him unrestricted access to every aspect of the cleanup effort—access that included the freedom to move at will above and below ground through the hazardous rubble.

For more than five months Langewiesche

kept watch at Ground Zero. The result is history in the present tense—a story largely hidden from the outside world, in which improvisation, urgency, a sense of mission, and emotional resilience have combined in a uniquely American form.

This three-part story will appear in *The Atlantic's* pages starting with our July/August double issue.

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The American member of the team was Panayiotis Zavos, a reproductive physiologist and an *in vitro* fertilization expert at the Andrology Institute of America, in Lexington, Kentucky. "The genie is out of the bottle," he told reporters. "Dolly is here, and we are next." Antinori and Zavos announced their intention of starting a human cloning project in an undisclosed Mediterranean country. Next up was Avi Ben-Abraham, an Israeli-American biotechnologist with thwarted political ambitions (he ran unsuccessfully for the Knesset) and no reputable scientific credentials, who attempted to attach himself to the project. Ben-Abraham hinted that the work would be done either in Israel or in an Arab country, because "the climate is more [receptive to human cloning research] within Judaism and Islam." He told the German magazine *Der Spiegel*, "We were all created by the Almighty, but now we will become the creators."

Both Antinori and Zavos glossed over the large gap between expertise with established infertility procedures and the technical skills required for reproductive cloning. Confronted with the prospect of high rates of aborted or malformed cloned embryos, they claimed to be able to weed out any defective embryos at an early stage of gestation. "We have a great deal of knowledge," Zavos announced to the press. "We can grade embryos. We can do genetic screening. We can do [genetic] quality control." This was possible, he said, because of highly sensitive diagnostic tests that can determine whether or not development is proceeding normally.

The fact is that no such tests exist; they have eluded even the most expert biologists in the field, and there is no hope that they will be devised anytime soon—if ever. No one knows how to determine with precision whether the repertoire of genes expressed at various stages of embryonic development is being "read" properly in each cell type within an embryo. Without such information, no one can know whether the developmental program is proceeding normally in the womb. (The prenatal tests currently done for Down syndrome and several other genetic disorders can detect only a few of the thousands of things that can go wrong during embryonic development.)

Rudolf Jaenisch, a colleague of mine with extensive experience in mouse reproductive cloning, was sufficiently exercised to say to a reporter at the *Chicago Tribune*, "[Zavos and Antinori] will produce clones, and most of these will die in utero . . . Those will be the lucky ones. Many of those that survive will have [obvious or more subtle] abnormalities." The rest of us biologists remained quiet. To us, Antinori, Zavos, and Ben-Abraham were so clearly inept that comment seemed gratuitous. In this instance we have, as on other occasions, misjudged the situation: many people seem to take these three and their plans very seriously indeed. And, in fact, this past April, Antinori claimed, somewhat dubiously, that a woman under his care was eight weeks pregnant with a cloned embryo.

In the meantime, the biotechnology industry, led by ACT, has been moving ahead aggressively with human cloning, but of a different sort. The young companies in this sector have sensed, probably correctly, the enormous potential of therapeutic (rather than reproductive) cloning as a strategy for treating a host of common human degenerative diseases.

The initial steps of therapeutic cloning are identical to those of reproductive cloning: cells are prepared from an adult tissue, their nuclei are extracted, and each nucleus is introduced into a human egg, which is allowed to develop. However, in therapeutic cloning embryonic development is halted at a very early stage—when the embryo is a blastocyst, consisting of perhaps 150 cells—and the inner cells are harvested and cultured. These cells, often termed embryonic stem cells, are still very primitive and thus have retained the ability to develop into any type of cell in the body (except those of the placenta).

Mouse and human embryonic stem cells can be propagated in a petri dish and induced to form precursors of blood-forming cells, or of the insulin-producing cells of the pancreas, or of cardiac muscle or nerve tissue. These precursor cells (tissue-specific stem cells) might then be introduced into a tissue that has grown weak from the loss of too many of its differentiated worker cells. When the ranks of the workers are replenished, the course of disease may be dramatically reversed. At least, that is the current theory. In recent months one version of the technique has been successfully applied to mice.

Therapeutic cloning has the potential to revolutionize the treatment of a number of currently untreatable degenerative diseases, but it is only a potential. Considerable research will be required to determine the technology's possibilities and limitations for treating human patients.

Some worry that therapeutic-cloning research will never get off the ground in this country. Its proponents—and there are many among the community of biomedical researchers—fear that the two very different kinds of cloning, therapeutic and reproductive, have merged in the public's mind. Three leaders of the community wrote a broadside early this year in *Science*, titled "Please Don't Call It Cloning!" Call therapeutic cloning anything else—call it "nuclear transplantation," or "stem cell research." The scientific community has finally awakened to the damage that the clowns have done.

This is where the newest acts of the circus begin. President George Bush and many pro-life activists are in one ring. A number of disease-specific advocacy groups that view therapeutic cloning as the only real prospect for treating long-resistant maladies are in another. In a third ring are several biotech companies that are flogging their wares, often in ways that make many biologists shudder.

Yielding to pressure from religious conservatives, Bush announced last August that no new human embryonic stem cells could be produced from early human embryos that had been created during the course of research sponsored

by the federal government; any research on the potential applications of human embryonic stem cells, he said, would have to be conducted with the existing repertoire of sixty-odd lines. The number of available, usable cell lines actually appears to be closer to a dozen or two. And like all biological reagents, these cells tend to deteriorate with time in culture; new ones will have to be derived if research is to continue. What if experiments with the existing embryonic-stem-cell lines show enormous promise? Such an outcome would produce an almost irresistible pressure to move ahead with the derivation of new embryonic stem cells and to rapidly expand this avenue of research.

How will we learn whether human embryonic stem cells are truly useful for new types of therapy? This question brings us directly to another pitfall: much of the research on human embryonic stem cells is already being conducted by biotech companies, rather than in universities. Bush's edict will only exacerbate this situation. (In the 1970s a federal decision effectively banning government funding of *in vitro* fertilization had a similar effect, driving such research into private clinics.)

Evaluating the science coming from the labs of the biotech industry is often tricky. Those who run these companies are generally motivated more by a need to please stock analysts and venture capitalists than to convince scientific peers. For many biotech companies the peer-review process conducted by scientific journals is simply an inconvenient, time-wasting impediment. So some of the companies routinely bypass peer review and go straight to the mainstream press. Science journalists, always eager for scoops, don't necessarily feel compelled to consult experts about the credibility of industry press releases. And when experts are consulted about the contents of a press release, they are often hampered by spotty descriptions of the claimed breakthrough and thus limited to mumbling platitudes.

ACT, the company that conducted the successful cow-cloning experiment and has now taken the lead in researching human therapeutic cloning, has danced back and forth between publishing in respectable peer-reviewed journals and going directly to the popular press—and recently tried to find a middle ground. (For a fuller discussion of ACT's efforts, see "Cloning Trevor," by Kyla Dunn, beginning on page 31.) Last fall, with vast ambitions, ACT reported that it had conducted the first successful human-cloning experiment. In truth, however, embryonic development went only as far as six cells—far short of the 150-cell blastocyst that represents the first essential step of therapeutic cloning. Wishing to cloak its work in scientific respectability, ACT reported these results in a fledgling electronic research journal named *e-biomed: The Journal of Regenerative Medicine*. Perhaps ACT felt especially welcome in a journal that, according to its editor in chief, William A. Haseltine, a widely known biotech tycoon, "is prepared to publish work of a more preliminary nature." It may also

have been encouraged by Haseltine's stance toward cloning, as revealed in his remarks when the journal was founded. "As we understand the body's repair process at the genetic level, we will be able to advance the goal of maintaining our bodies in normal function, perhaps perpetually," he said.

Electronic publishing is still in its infancy, and the publication of ACT's research report will do little to enhance its reputation. By the usual standards of scientific achievement, the experiments ACT published would be considered abject failures. Knowledgeable readers of the report were unable to tell whether the clump of six cells represented the beginning of a human embryo or simply an unformed aggregate of dying cells.

One prominent member of the *e-biomed* editorial board, a specialist in the type of embryology used in cloning, asked Haseltine how the ACT manuscript had been vetted before its publication. Haseltine assured his board member that the paper had been seen by two competent reviewers, but he refused to provide more details. The board member promptly resigned. Two others on the editorial board, also respected embryologists, soon followed suit. (Among the scientists left on the board are two representatives of ACT—indeed, both were authors of the paper.) Mary Ann Liebert, the publisher of the journal, interpreted this exodus as a sign that "clearly some noses were out of joint." The entire publication process subverted the potentially adversarial but necessary dynamic between journal-based peer review and the research scientist.

No one yet knows precisely how to make therapeutic cloning work, or which of its many claimed potential applications will pan out and which will not. And an obstacle other than experimental problems confronts those pushing therapeutic cloning. In the wake of the cloning revolution a second revolution has taken place—quieter but no less consequential. It, too, concerns tissue-specific stem cells—but ones found in the tissues of adults. These adult stem cells may one day prove to be at least as useful as those generated by therapeutic cloning.

Many of our tissues are continually jettisoning old, worn-out cells and replacing them with freshly minted ones. The process depends on a cadre of stem cells residing in each type of tissue and specific to that type of tissue. When an adult stem cell divides, one of its two daughters becomes a precursor of a specialized worker cell, able to help replenish the pool of worker cells that may have been damaged through injury or long-term use. The other remains a stem cell like its mother, thus ensuring that the population of stem cells in the tissue is never depleted.

Until two years ago the dogma among biologists was that stem cells in the bone marrow spawned only blood, those in the liver spawned only hepatocytes, and those in the brain spawned only neurons—in other words, each of our tissues had only its own cadre of stem cells for upkeep.

Once again we appear to have been wrong. There is mounting evidence that the body contains some rather unspecialized stem cells, which wander around ready to help many sorts of tissue regenerate their worker cells.

Whether these newly discovered, multi-talented adult stem cells present a viable alternative to therapeutic cloning remains to be proved. Many of the claims about their capabilities have yet to be subjected to rigorous testing. Perhaps not surprisingly, some of these claims have also reached the public without careful vetting by peers. Senator Sam Brownback, of Kansas, an ardent foe of all kinds of cloning, has based much of his case in favor of adult stem cells (and against therapeutic cloning) on these essentially unsubstantiated scientific claims. Adult stem cells provide a convenient escape hatch for Brownback. Their use placates religious conservatives, who are against all cloning, while throwing a bone to groups lobbying for new stem-cell-based therapies to treat degenerative diseases.

Brownback would have biologists shut down therapeutic-cloning research and focus their energies exclusively on adult stem-cell research. But no one can know at present which of those two strategies is more likely to work. It will take a decade or more to find out. Many biologists are understandably reluctant to set aside therapeutic-cloning research in the meantime; they argue that the two technologies should be explored simultaneously.

Precisely this issue was debated recently by advisory committees in the United States and Germany. The U.S. committee was convened by Bruce Alberts, the president of the National Academy of Sciences and a highly accomplished cell biologist and scientific educator. Quite naturally, it included a number of experts who are actively involved in exploring the advantages and disadvantages of stem-cell therapies. The committee, which announced its findings in January, concluded that therapeutic cloning should be explored in parallel with alternative strategies.

For their trouble, the scientists were accused of financial self-interest by Steven Milloy of Fox News, who said, "Enron and Arthur Andersen have nothing over the National Academy of Sciences when it comes to deceiving the public ... Enter Bruce Alberts, the Wizard of Oz-like president of the NAS ... On his own initiative, Alberts put together a special panel, stacked with embryonic-stem-cell research proponents and researchers already on the taxpayer dole ... Breast-feeding off taxpayers is as natural to the NAS panel members as breathing."

The German committee, which reached a similar conclusion, was assembled by Ernst-Ludwig Winnacker, the head of his country's national science foundation. Winnacker and his colleagues were labeled "cannibals" by the Cardinal of Cologne. Remarks like the ones from Steven Milloy and the cardinal seem calculated to make public service at the interface between science and society as unappealing as possible.

President Bush, apparently anticipating the NAS panel's conclusion, has appointed an advisory committee all but guaranteed to produce a report much more to his liking. Its chairman, Leon Kass, has gone on record as being against all forms of cloning. (Earlier in his career Kass helped to launch an attack on *in vitro* fertilization.)

Meanwhile, a coalition of a hundred people and organizations recently sent a letter to Congress expressing their opposition to therapeutic cloning—among them Friends of the Earth, Greenpeace, the Sierra Club, the head of the National Latina Health Organization, and the perennial naysayer Jeremy Rifkin. "The problem with therapeutic cloning," Rifkin has said, "is that it introduces commercial eugenics from the get-go." Powerful words indeed. Few of those galvanized by Rifkin would know that therapeutic cloning has nothing whatsoever to do with eugenics.

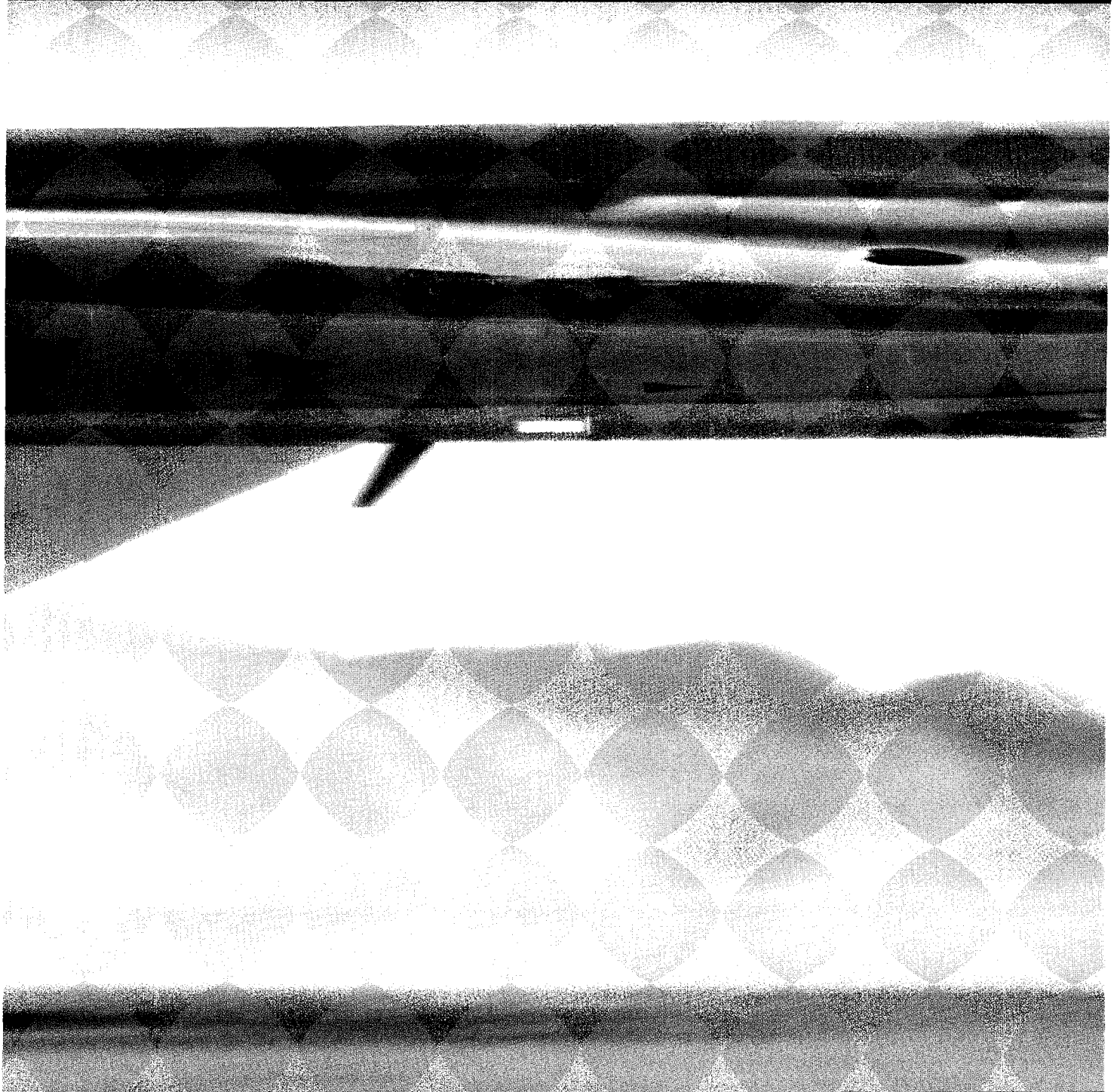
Usually progress in biology is held back by experimental difficulties, inadequate instruments, poorly planned research protocols, inadequate funding, or plain sloppiness. But in this case the future of research may have little connection with these factors or with the scientific pros and cons being debated earnestly by members of the research community. The other, more public debates will surely be the decisive ones.

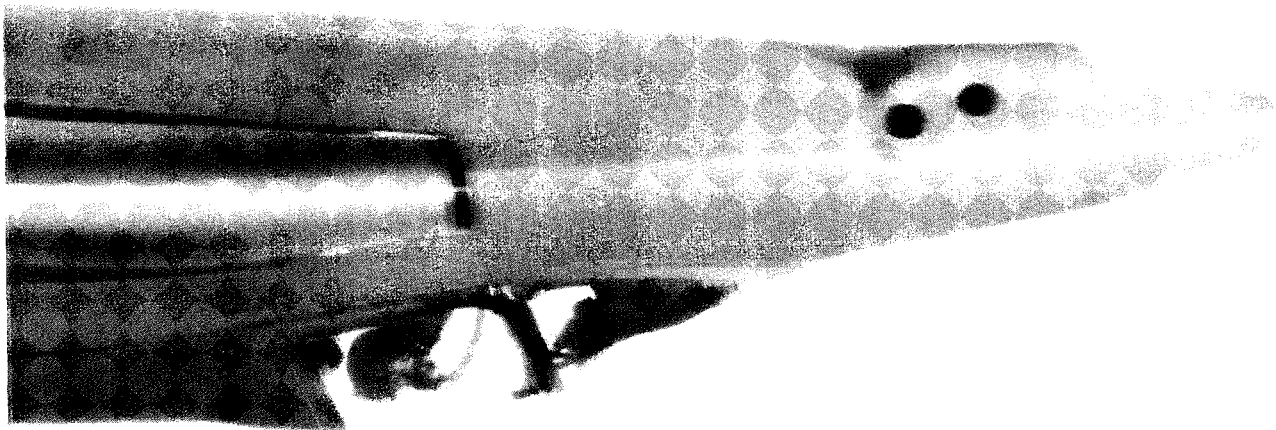
The clashes about human therapeutic cloning that have taken place in the media and in Congress are invariably built around weighty moral and ethical principles. But none of us needs a degree in bioethics to find the bottom line in the arguments. They all ultimately converge on a single question: When does human life begin? Some say it is when sperm and egg meet, others when the embryo implants in the womb, others when the fetus quickens, and yet others when the fetus can survive outside the womb. This is a question that we scientists are neither more nor less equipped to decide than the average man or woman in the street, than a senator from Kansas or a cardinal in Cologne. (Because Dolly and the other cloned animals show that a complete embryo can be produced from a single adult cell, some biologists have proposed, tongue in cheek, that a human life exists in each one of our cells.) Take your pick of the possible answers and erect your own moral scaffolding above your choice.

In the end, politics will settle the debate in this country about whether human therapeutic cloning is allowed to proceed. If the decision is yes, then we will continue to lead the world in a crucial, cutting-edge area of biomedical research. If it is no, U.S. biologists will need to undertake hegiras to laboratories in Australia, Japan, Israel, and certain countries in Europe—an outcome that would leave American science greatly diminished. ■

*Robert A. Weinberg, the winner of the 1997 National Medal of Science, is a member of the Whitehead Institute for Biomedical Research and a professor of biology at the Massachusetts Institute of Technology. He is the author of several books on cancer research, including *Racing to the Beginning of the Road* (1996) and *One Renegade Cell* (1998).*

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UNCLE SAM BUYS AN AIRPLANE

How Lockheed Martin beat Boeing for the biggest military contract in history—and how that one contract could change the way the military builds and pays for its weapons

BY JAMES FALLOWS

.....

A few minutes before two o'clock on a Friday afternoon last fall, Dain Hancock stood up and left a packed auditorium in Fort Worth, Texas. He tried to be unobtrusive, but every eye in the room followed him. The 500 people gathered there, plus thousands more watching closed-circuit broadcasts in other cities, were employees or associates of the Lockheed Martin corporation, all waiting to hear whether their company had won the largest military contract ever awarded. The competition for this contract, to build a new airplane called the Joint Strike Fighter (JSF), had begun almost a decade before. The orders a contract would produce could provide jobs for decades, beyond the likely retirement age of everyone in the room. Pentagon representatives had agreed to telephone the heads of the competing companies just before the official announcement was made. Hancock, the president of Lockheed Martin's aeronautics division, was on his way to get the news from his boss.

Five minutes later he was back, stone-faced. He took a seat in the front row of the auditorium near Tom Burbage, a former Navy test pilot who directed the Lockheed Martin team that was competing for the contract. Burbage leaned over and asked, "What happened?" "Vance called," Hancock whispered, referring to Vance Coffman, Lockheed Martin's CEO. "We won. But don't react."

Burbage, a lanky, athletic-looking man in his fifties with a long jaw, stared ahead, expressionless. The live broadcast from the Pentagon began, and for ten minutes officials seemed to make a game out of delaying the information everyone wanted to hear: whether the JSF contract would go to the team at Lockheed Martin or to a competing team at Boeing. Finally James Roche, the Secretary of the Air Force, took the podium to announce the winner. "Both proposals were very good," he said. "Both demo programs were very good. But on the basis of strengths, weaknesses, and degrees of risk of the program, it is our conclusion . . . that the Lockheed Martin team is the winner of the Joint Strike Fighter program on a best-value basis."

Before the word "Lockheed" was fully out of Roche's

mouth, the audience in Fort Worth erupted and drowned out the rest of his remarks. Senator Kay Bailey Hutchison, a Republican from Texas who had come to show her support, leaped into the air and screamed. So did Kay Granger, a former mayor of Fort Worth and also a Republican, who now represented the district in Congress. Burbage was one of the few who stayed in their seats—a display of dutifulness for which he was ribbed at the company parties that went on through the weekend.

The joy in Fort Worth was matched by despair in St. Louis, in Seattle, in Washington, D.C., and in other places where Boeing employees and associates had gathered to watch the broadcast. The last time a competitor had been eliminated from the JSF contest, it had gone on to lose its corporate independence. That was in 1996, when the field of candidates shrank to two in a process known at the Pentagon as a "downselect." The renowned fighter-plane maker McDonnell Douglas, nicknamed "McAir," failed to make the cut. Within a year McAir had merged with Boeing, under terms that replaced the McDonnell Douglas name with Boeing's on the factories in St. Louis where McAir's F-4 Phantom, F-15 Eagle, and F-18 Hornet were made.

Boeing was big and diversified enough not to fear going out of business without the JSF, which will be known as the F-35. But Lockheed Martin depended more heavily on defense contracting, and had more at stake. For twenty-five years its mile-long factory in Fort Worth had kept busy producing the F-16 Falcon fighter plane for the U.S. Air Force and more than a dozen foreign militaries. The F-16 (originally made by a division of General Dynamics that is now part of the Lockheed Martin conglomerate) was nearing the end of its long and highly successful run. If Lockheed Martin could not follow it with the JSF, its officials warned, the company would be consigned to the parts business, surviving on subcontracts from Boeing and other strong manufacturers. Boeing's officials had viewed this as poormouthing—part of an attempt to build sympathy for the company and tilt the JSF decision in Lockheed Martin's



favor. But the impact on both companies was clear soon after the decision was announced.

In Fort Worth, Lockheed Martin began clearing room on the factory floor for the new JSF production line. It began taking bids from suppliers and subcontractors, it made presentations to foreign governments that might eventually buy the airplane, and it hired new employees at a rate of 250 a month. In St. Louis, Boeing immediately canceled plans to build a new, modern factory for JSF production. It

removed the posters and models for its version of the JSF from its buildings, and began looking for other roles for the hundreds of people on its JSF team. In Washington its lobbyists redoubled their efforts to shore up Boeing's defense work. These included supporting a controversial and successful congressional campaign to get the Air Force to lease Boeing civilian airliners for conversion to military tankers, while Missouri politicians launched a controversial and unsuccessful effort to force Lockheed Martin to share the work with Boeing and build some of the new JSFs in St. Louis. Early this year the victorious Lockheed Martin sent a team of recruiters to set up a job fair in a motel near Boeing's plant in St. Louis. The recruiters placed ads in the local papers, encouraging Boeing employees to switch teams and be part of "the future of tactical aviation!"

Boeing's response was to emphasize what it considered to be the *real* future of tactical aviation—unmanned combat and reconnaissance aircraft that were more-advanced versions of the Predator drones used in Afghanistan. In formal and informal comments to military officers, civilian analysts, politicians, consultants, reporters, and other members of the defense community, Boeing representatives were careful never to speak dismissively of the JSF. But the next great advance, the one that mattered, would be in unmanned combat vehicles. These could be built more cheaply than normal airplanes, because they could omit many systems designed for pilot protection, and they could save American lives. In this field Boeing held the edge.

Beyond its impact on the two companies, the JSF project is enormously important for the U.S. military—and for U.S. taxpayers, who in the next few years will be asked to support this and other plans that will make for the largest increase in defense spending since the height of the Cold War. The JSF matters because of both its scale and its conceptual ambition. The planners at the Pentagon and at Lockheed Martin imagine that as many as 6,000 of these airplanes may be bought, at a total cost of as much as \$200 billion, over the next twenty-five years. If all goes according to plan, about 3,000 of the JSFs will go to the original "investors" in the program—the U.S. Air Force, Navy, and Marine Corps, plus the Royal Air Force and Royal Navy in Britain. All have shared the cost of developing the plane. The other 3,000 are supposed to go to customers in the rest of the world. Of the 4,000-odd F-16s produced since the late 1970s, nearly half have gone to foreign customers, and the idea is that the JSF will be even more attractive as an export airplane. "If it succeeds, it will simply dominate the world market," Richard Aboulafia, a well-known aviation analyst, says. "It could do to the European fighter industry what the F-16 almost did: kill it."

The ambitious idea behind the JSF is to address several chronic problems of U.S. military acquisition policy simultaneously. If it succeeds, it will put military procure-

ment on a more affordable, more effective track. If it fails, it will underscore how deep those problems are.

The most obvious novelty of the JSF is the concept that one airplane can fill the needs of three military branches. Officially, the Air Force, the Navy, and the Marines make up only two services, because the Marine Corps is part of the Navy. But the Marines differ greatly from the rest of the Navy in operational requirements, and they have zealously fought to preserve the independence of Marine Corps aviation, with airplanes designed to support them in ground combat.

Each service, in fact, differs in its conception of the ideal fighter plane. The Air Force traditionally yearns for whatever is fastest and most elaborately equipped, in order to gain air superiority against enemy fighters. The Navy needs fighters that are built like trucks, to survive the shock of landing on carrier decks and the constant exposure to salt air, far from maintenance depots. The Marine Corps wants airplanes designed for expeditionary flexibility—planes that can follow the Marines into battle and operate from small, remote landing strips. Because of these differing needs, to say nothing of normal service parochialism, each of the three branches has preferred to design and buy its own equipment. The modern history of joint aircraft for the U.S. military is dominated by one outright disaster—the notorious TFX project of the early 1960s, which led to an expensive fighter that neither the Navy nor the Air Force wanted to use—and one unsatisfying success. This was the F-4 Phantom, used extensively in Vietnam. The F-4 was conceived and built as a Navy airplane, which civilian officials then obliged the Air Force to buy as well. Because of its carrier heritage, it was far heavier and therefore less maneuverable than an Air Force-only fighter might have been.

The JSF project undertook to change this. Its gamble was that a family of closely related airplanes could be different enough to meet each service's needs and yet similar enough to realize major economies of scale. Automobile and computer companies had been pulling off this feat for years: an SUV and a pickup truck appeal to different customers but use the same engine, drive train, chassis, and so on. Applying this logic to military equipment, with similar engines, instruments, and software, would be a first.

The JSF was also novel in its approach to global industrial policy. The F-16, still the reigning export champ, was designed for U.S. purposes and then sold around the world. For both military and commercial reasons, the JSF was conceived as a "world airplane." The military advantage of this approach is "interoperability": in some future joint effort like the Gulf War or the battle in Kosovo, airplanes from allied nations would have the same parts, the same software, the same repair kits. (The Pentagon is now working out rules for the "tailorability" of the JSF, which will presumably include limited software or less advanced radar systems.) The commercial advantage was like that of other enterprises in the global era: being able to attract customers and build supply

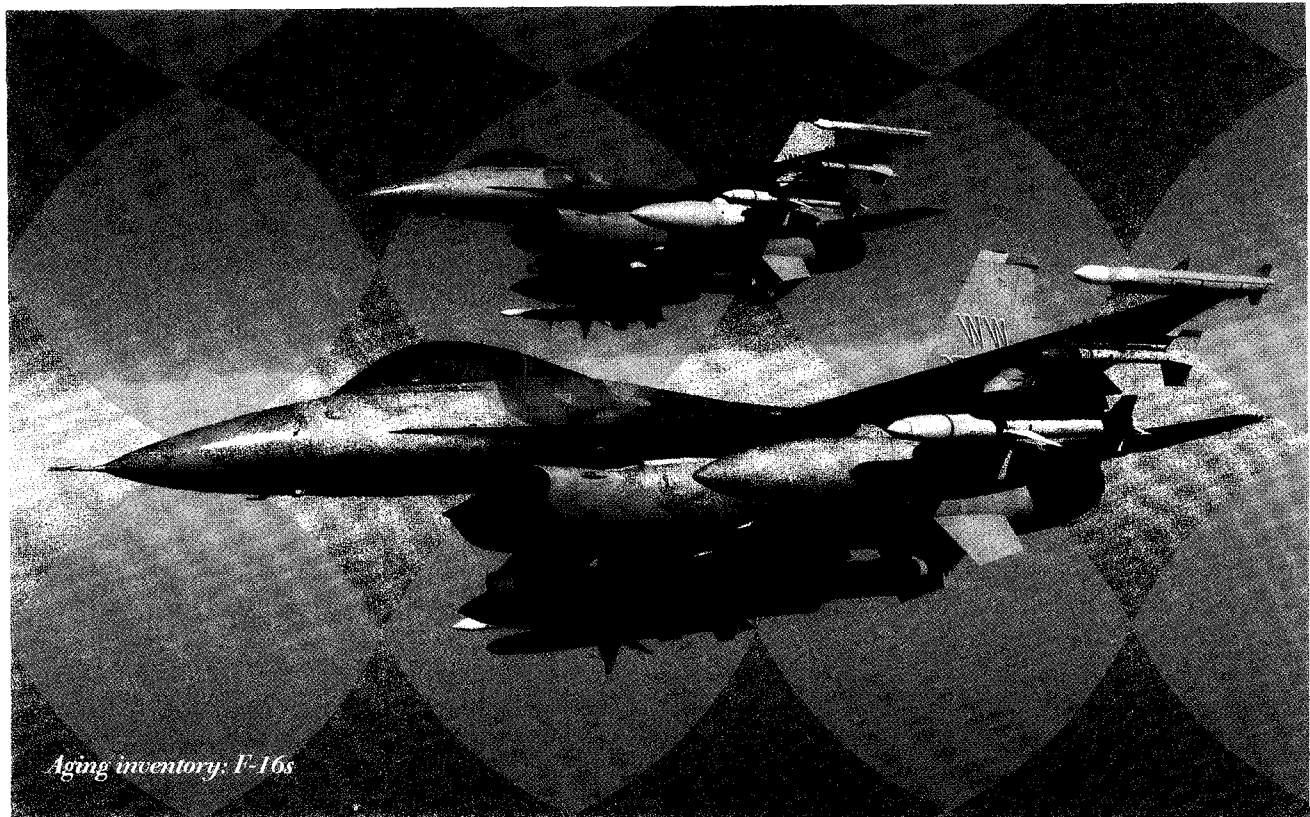
networks around the world. Starting with Britain, other countries were invited to share the development costs of the airplane and in return to have their companies become eligible for competition as suppliers. Rolls-Royce now makes a crucial propulsion-system part in the winning Lockheed Martin design, and BAE, the former British Aerospace, will make part of the airframe. Holland, Denmark, Italy, Turkey, and Norway, among others, are seen as likely participants.

The real ambition of the project involves cost. The inability to control the cost of modern weapons is arguably America's greatest long-term military vulnerability. Or if not quite the same as openness to terrorism or rogue-state nuclear attack, it is a huge handicap in our ability to respond.

The jokey way of stating this problem is as one of "Augustine's Laws," which were formulated by Norman Augustine, a former chairman of Martin Marietta. His Law XVI was "In the year 2054, the entire defense budget will purchase just one aircraft. This aircraft will have to be shared by the Air Force and Navy 3½ days each per week, except for leap year, when it will be made available to the Marine Corps for the extra day." The serious truth behind this law is that since the end of World War II the cost per weapon for airplanes, tanks, and ships has risen much faster than the defense budget has, so every single category of weapon has declined in numbers. The United States built some 14,000 P-51 and 15,000 P-47 fighters during World War II. It built more than 6,000 of the main Korean War fighter, the F-86, plus more than 7,000 F-84s. It built 5,200 Vietnam-era F-4 fighters. Of the F-16s, designed to be cheap and numerous, the Air Force acquired just over 2,200. The current high-end fighter is the F-22—and the Air Force now plans to buy about 300. The capabilities of the new equipment do offset the diminished numbers, to some extent. But even in the military there is unease about how far the numbers have fallen—or, to use the military term, how much the force structure has shrunk.

The truly revolutionary idea behind the JSF was to break that pattern, by building a modern airplane that was cheap enough to offset the steady decline in force structure. The project would do this by applying innovations from civilian industry, especially modern "lean manufacturing" techniques, in a way never before seen in the defense world. Even more unusual was the notion that its success would be judged by whether or not it stuck to its projected costs. The target costs, as stated in 1994 dollars, ranged from \$28 million per plane for the Air Force version of the JSF to \$38 million for the Marine Corps version. Although comparing different planes from different eras is difficult, the target costs would put the JSF in roughly the same cost bracket as the F-16. The F-22, by comparison, will cost \$100 million apiece and perhaps much more, depending principally on how many units of the plane Congress ultimately votes to build.

The main reason to think this gamble will pay off is the JSF's record up through the moment when Boeing and



Lockheed Martin got the news: the cost of the rival models was surprisingly close to target levels. The main reason to expect failure is the record of most weapons projects in the past half century. If the cost of this airplane rises even half as much as the historical norm, the JSF will not come close to its advertised purpose of replacing today's aging fleet. We are midway through a drama that will help determine what practical results we get for our military investment.

This new airplane has gotten as far as it has because of the cunning, ingenuity, and perseverance of people like Darleen Druyun, George Muellner, and Jacques Gansler—people largely unknown to the public who have fought the battles over the JSF inside corporate, governmental, and military bureaucracies. They have won some crucial victories. The hardest work is still ahead.

AVOIDING THE DEFENSE DEATH SPIRAL

Without intending to be, Dick Cheney was the father of the Joint Strike Fighter. In January of 1991, as the Secretary of Defense, Cheney was wrapped up in preparations for war in the Persian Gulf. But on January 7, ten days before the fighting began, he decided to cancel work on a new Navy airplane called the A-12. The A-12 had become a nightmare case of modern military procurement, with the contractor and the military exchanging accusations of deceit and malfeasance, and with price projections rising above \$100 million per plane. Cheney decided to write off hundreds of millions of dollars

in start-up costs so as to save billions in future commitments.

Suddenly the Navy had a problem, which in different ways the Air Force and the Marine Corps had too. None of them had financially realistic plans for getting the new airplanes they wanted. The Air Force's situation was especially acute. Starting in the 1970s it had put well over 2,000 new fighter and attack planes into its squadrons, in a "high-low mix." The "high" planes were the costly, complicated F-15s, designed for air superiority over the Soviet Union and everyone else. The "low" planes were the less expensive but in many ways more effective F-16s and A-10s. Because these airplanes had been new all at once, they got old all at once. At the time of Cheney's decision, most of the Air Force's inventory was made up of planes that would reach the end of their projected service near the turn of the century. Because it takes a decade or more to design and produce new airplanes, and because aging fighter planes are steadily more expensive to keep patched up and flying, the Air Force needed to do something. (As for the lumbering B-52 bombers, which were new when George W. Bush was in grade school and yet are still flying over Afghanistan, the operating stress is lower on them than it is on fighter planes. And because the bomber fleet is smaller and unit costs for replacements are much higher, it makes economic sense to keep the bombers flying.)

The one plane the Air Force had in the works clearly wouldn't solve the larger problem. In the 1980s it had begun work on the F-22, the ultimate go-anywhere, fight-anything Cold War weapon. To ensure that the plane could penetrate Soviet air defenses and beat any MiG then on the drawing

boards, it was designed with barely an eye to cost. When the Soviet Union and the threat of its air force went away, the F-22 remained—but it entered what Chuck Spinney, an influential budget analyst at the Pentagon, has called the “Defense Death Spiral.” In the death spiral Congress and the Pentagon buy into a program because the promised performance is so high that the projected costs seem acceptable. Then problems emerge, the schedule slips, and the promised costs start to seem “unrealistic.” (The corollary in civilian life is what happens after you contract to renovate your kitchen.) Congress notices the cost and starts worrying. It slows down the production rate and reduces the total order, so the per-unit price really soars. Then Congress or an administration gets serious about cutting the program.

This is what happened to the B-2 bomber. The Air Force originally planned to buy more than 100 and ended up with twenty-one, at a cost of more than \$1 billion apiece. As for the F-22, the first Bush Administration signed up for 750, at \$50 million apiece. By the end of the Administration the “buy” had been cut to 648. During the Clinton Administration the buy was reduced, in stages, to 339—on the reasonable grounds that the plane was getting too expensive and that the Soviet threat had faded. The current Bush Administration has lowered the acquisition target yet again, to around 300.

The Air Force leadership has remained loyal to the F-22, consistent with its general enthusiasm for the highest-end, most sophisticated fighter conceivable. “This airplane will make the skies safe for everybody else,” was the way a retired four-star Air Force general recently put it to me. But replacing the small F-16s and A-10s with the new airplanes would mean, in the words of Jacques Gansler, who directed defense acquisition policy during Bill Clinton’s second term, “cutting the force structure in half.” So in 1991 the Air Force was shopping for a cheaper airplane.

The Marine Corps had its own sort of airplane emergency. Marine aviation has had two enduring goals: to retain an independent fleet of aircraft, so that in a ground battle the Corps need not rely on Navy planes operating from aircraft carriers; and to have airplanes suited to the “expeditionary,” first-to-arrive tenets of Marine doctrine. The Corps’ answer had been the Harrier, a British-designed “jump jet” that can take off and land vertically, like a helicopter. That the Harrier works at all is remarkable. Of the several dozen other vertical-landing airplanes the world’s militaries have tried to produce, only the Harrier and an old Soviet model called the Yak-36 ever went into production. But the Harrier was always so close to not working, its jet engine running at redline (the maximum safe power setting) to produce enough thrust to lift it up and down, that its safety record was by far the worst of any airplane in U.S. military use. In any case, the Harriers were older and much creakier than the Air Force’s F-16s. The Corps wanted something to take their place, and its representatives told

any politician who would listen about the need for a new STOVL (“short takeoff vertical landing”) airplane.

Then there was the Navy. Cheney canceled the A-12, which would have given it a new airplane that could fly greater distances from a carrier deck and be protected by stealth (anti-radar) technology, just like the latest Air Force airplanes. The Navy responded by ordering a larger and more expensive version of its F-18 Hornet—the F-18E/F Super Hornet. But this put it in the same bind as the Air Force, because the Super Hornet, like the F-22, was too expensive to buy in large numbers.

This situation became known in the military as the tactical-aviation train wreck. The Air Force was trying to buy more F-22s, the Navy was trying to buy its expensive new airplanes, the Marines wanted something different—and no one imagined that there was enough money to satisfy all their demands. Meanwhile, the existing fleet kept getting closer to the end of its projected service life.

In principle the Air Force could have solved its problem simply by placing new orders for the trusty old F-16. Apart from the instinctive aversion to going back to old equipment, the main argument against this strategy was that the F-16 had been designed before the discovery of stealth technology, and would therefore always be more visible on radar than newer planes.

Cheney passed the cost problem to Les Aspin, the Clinton Administration’s first Secretary of Defense. Aspin served through Clinton’s first year, resigned after the “Black Hawk Down” debacle in Somalia, and was replaced by his undersecretary, William Perry. (A year and a half later Aspin died, at fifty-six, of a stroke.) Solving the services’ aviation problems with the kind of airplanes then available was simply impossible. As part of their “bottom-up review” to determine what kind of military the United States needed and could afford now that the Cold War was over, Aspin and Perry created a project called JAST, for “joint advanced strike technology.” JAST was a research effort to determine, among other things, whether technical advances like those from civilian industry could be used to avert the train wreck. The findings amounted to a yes, and in 1994 George Muellner learned that he would be the one to make this happen.

WHERE NO GENERAL HAD DARED GO BEFORE: THE BOTTOM LINE

In 1994 George Muellner was a one-star Air Force general, fifty-one years old. He had been a decorated fighter pilot in Vietnam and a commander during the Gulf War. He was on his way to what he considered a plum assignment in the Pentagon when he got a call from Merrill McPeak, then the Air Force Chief of Staff. McPeak asked Muellner how he would like to be in charge of a campaign to build an airplane not just for the Air Force but for all the services. The airplane would have to avoid the death spiral through radical cost-cutting, and it would have to meet the

distinctive needs of the Air Force, the Navy, and the Marine Corps with one new machine.

Muellner said he would not like this opportunity one bit. But he knew the perfect candidate—some other general. A few weeks later, Muellner told me early this year, he was called back for a meeting with civilian Pentagon officials, who asked him again how he would like the assignment. He told them, “I have to be honest—I really don’t want to lead this program. I have some real misgivings about its likelihood of success.” Half an hour after that interview McPeak phoned him. “It didn’t work,” he said. “You got the job.”

As the director of JAST, Muellner was supposed to convert a mere research team into an actual airplane-buying effort—the Joint Strike Fighter project. “From the very beginning,” he told me, “the program was resented by all the military services. The new administration had come in and canceled a number of the major programs”—on top of Cheney’s A-12 cancellation—“and they really did not have a good solution as to what would replace them.”

Through 1994 Muellner assembled a staff and began to consider how to overcome the history of joint-program failure and the current reality of adversaries in every corner of the Pentagon. He met with each of the service chiefs and asked what kind of airplane the services really needed. Admiral Frank Kelso, the Chief of Naval Operations, told him what the Navy required: an airplane with two engines, in case one failed over the ocean; two seats, so that a navigator or a weapons operator could be aboard; and enormous gas tanks, so that the plane could fly 1,000 miles inland from a carrier to launch an attack.

The Air Force? Merrill McPeak told Muellner that the ideal airplane would be a modernized, stealthy version of the F-16, with one seat and one engine, to keep size and weight down and operating costs low. It had to be more durable than the F-16. And one more thing, McPeak said: “I don’t want the damned Navy skewing the program to where I can’t afford it.” The Air Force operated more fighters than the Navy did, so it had more to lose if per-plane costs got out of control.

Speaking for the Marines, Carl Mundy, the commandant, said he wanted the same airplane McPeak wanted—but it also had to land vertically, like a helicopter.

“It became immediately obvious that we were going to have a difficult time with any design that would satisfy all of them,” Muellner told me. The Royal Navy’s interests also had to be considered. Its aircraft carriers had smaller decks and airplane elevators than the U.S. Navy’s, and the plane would have to fit them, too.

The solution Muellner and his team devised was the first major break for the JSF. They tried to cope with inter-service rivalry through a rotating command structure. The directorship of the JSF program, a military position, would switch every two years among the services: an Air Force general would be replaced by a Marine general or a Navy

admiral, who would be replaced by another Air Force general. (The rotation reflected the project’s nature as a joint Air Force–naval services undertaking.) Each military program director would report to a civilian supervisor from the other service: when an Air Force general was running the program, he would answer to the assistant secretary of the Navy, and vice versa.

Inter-service cooperation could also lead to lower costs. The things that make an airplane expensive are its engine, its avionics (radar and other electronic systems), and the software to run them. These are usually invented from scratch for each new model. What if the components of the different planes were kept as similar as possible, no matter how different the planes might look from the outside?

This concept eventually led to a goal of “80 percent commonality” among the family of airplanes that would meet the three services’ needs. The commonality was also designed to keep support costs down in the long run. If a damaged Navy airplane had to land at an Air Force base, all the spare parts would be there. The next time British and American forces fought together, each could support the other’s planes.

All this new thinking was in the service of an even blander-seeming, yet revolutionary, concept within the military: CAIV, or “cost as independent variable.” In layman’s terms this is nothing more than the idea that the airplane would be held to a cost target. In most military contracting, cost is the dependent variable. The Air Force decides, midway through a development project, that an airplane must carry 2,500 pounds of bombs rather than 2,000, and the cost ratchets up accordingly. For the JSF, costs were supposed to be fixed. If one of the services wanted a new feature, it had to take something else out.

When George Muellner gave his first speech after taking command of the joint advanced strike technology program, he drew a line through the “advanced” and changed it to “affordable.” “Affordability is absolutely the centerpiece of this program,” Leslie Kenne, an Air Force general who was the JSF program director in the late 1990s, told *Aviation Week & Space Technology*. (Kenne was the first woman to become a three-star general in the Air Force.) “I think this is the first [program] to have cost in the warfighters’ requirements document.” Translation: “the warfighters,” also known as customers, are the military services; a “requirements document” lays out the formal specifications the airplane must meet. Requirements had usually been confined to speed, payload, and so on. Now they would include cost. What a thought! “All of a sudden,” Kenne said, the services “are just as accountable for the cost as they are for all the performance, survivability, and lethality that they want. And that makes you behave differently.” One of the first cost-driven decisions was that the Navy could get along with a single-engine airplane. Modern engines were reliable enough, and with two engines the cost target would be a joke.

A JET LIKE A HELICOPTER

By 1995 the competition was on. The JSF program office gave grants of about \$30 million each to four companies, to produce designs of the new airplanes. (Northrop Grumman, the fourth company, joined the McDonnell Douglas team shortly thereafter.) The companies had to use just the grant money, and not spend any of their own. This was meant in part to keep the largest company, Boeing, from outspending the others. It was also meant to spare all the companies the woes that had attended the B-2 and F-22 programs when bidding contractors invested money in the expectation of huge production runs that never occurred.

The approaches taken by the remaining companies were distinct from the start, primarily because of how each company planned to deal with the Marine Corps. McDonnell Douglas seemed to be betting that sooner or later the military would abandon the fantasy of making an affordable first-rate fighter plane that could also behave like a helicopter. The McDonnell Douglas plane was sleek and attractive, and very effective in its Air Force and Navy roles. But its solution to the Marines' demand was an extra jet engine, with its nozzle pointing downward, which the pilot would switch on when he came in to land. Nothing like this had been tried in any other flying machine, and the approach was sure to be considered high-risk.

The gamble that the Marines would be overruled by the other services was not irrational. The STOVL model would always be technically harder to develop and more risk-prone than the others, and thus more expensive. Because the Marine Corps plane represented only 600 of the planned run of 3,000 JSFs for the U.S. and UK markets, the military might drop it rather than let it delay or distort the cost of the overall program. (The Air Force plans to buy at least 1,750 JSFs, the Navy 480, the British military 150.)

What this calculation left out was the intensity of the Marine Corps' desire for a new STOVL plane of its own, and the deftness of its lobbying skills with Congress and the media. Here the Corps was unique among the services. The Air Force leadership lives and dies to defend the high-end F-22. And "when the Navy thinks of 'platforms,' it thinks of ships," Rudy de Leon, who was the deputy secretary of defense at the end of the Clinton Administration and is now an executive with Boeing, told me. "The airplane is [just one] part of the carrier." If the carrier uses F-18s rather than JSFs, so be it. "But for the Marines, this is their future." Another civilian observer told me, "The other services were given something that fit their needs. The Marines were given something that fit their vision." For reasons that range from a reputation for plain-spokenness to the network of Marines working as military aides in congressional staff offices to the history and aura of the Corps, the smallest of the services has by far the best track record in defending budgets for its projects. By the time of the first downselect, in late

1996, building a STOVL model still mattered, and McDonnell Douglas's odd, risky airplane was squeezed out.

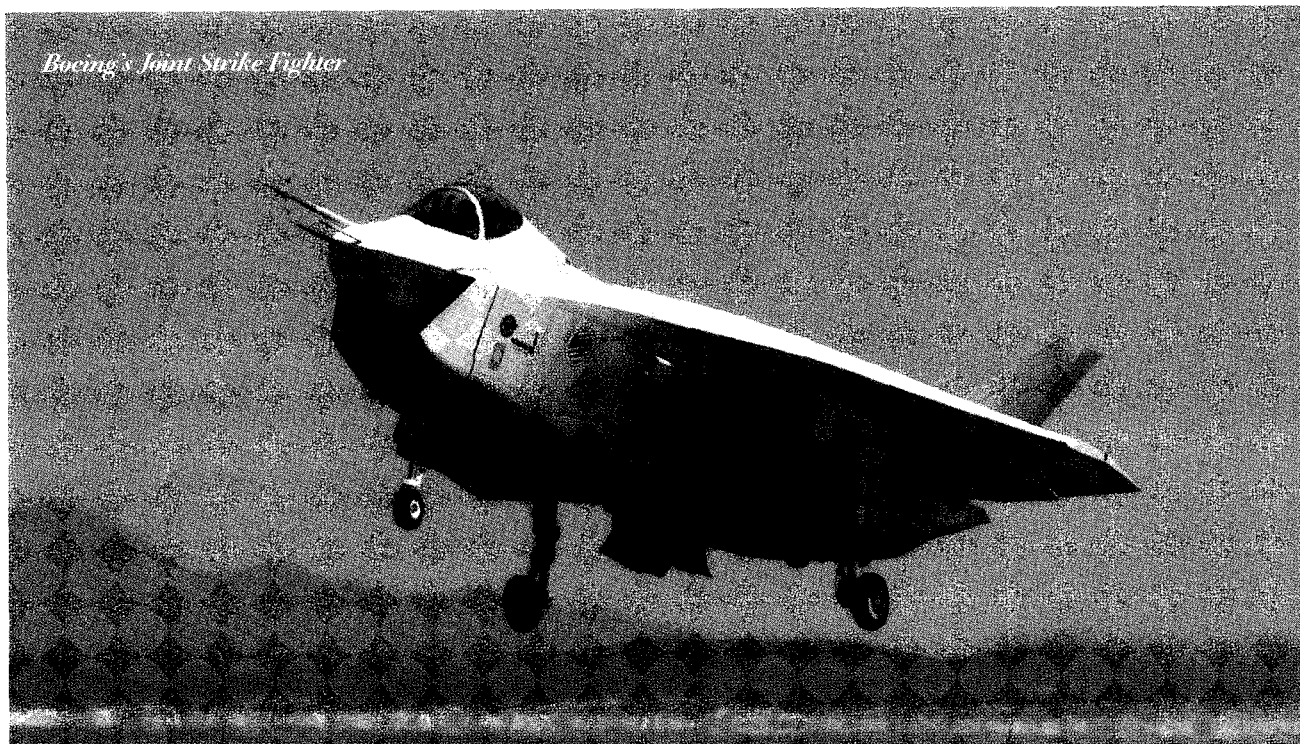
The remaining two planes were odd too. Boeing decided to take a proven route, by modifying the design of the Harrier. The Harrier works on the "direct lift" principle: when it wants to go up like a helicopter, some of the exhaust from its jet engines is diverted from the tail to little downward-pointing nozzles under the wings and the nose. Boeing used an updated system of direct lift. In the crucial transition phase of flight, as the Marine pilot swooped toward, say, a remote base and began descending to a tiny clearing, a trapdoor would close in the engine's tailpipe and the exhaust would be shunted to nozzles in other parts of the plane, cushioning its descent.

The decision to go with direct lift had an engineering consequence and an aesthetic one, and it is hard to tell which was more important. The engineering problem was that the Boeing plane, like the Harrier before it, was chronically on the verge of not being able to lift itself. The airplane weighed roughly 30,000 pounds, so to ascend vertically it needed more than 30,000 pounds of jet thrust. The engine produced that—but barely, and with what were called environmental side effects. For instance, grass would catch fire, or chunks of asphalt would be blasted away. It was like launching a small rocket, and the margin for error was tiny. If the engine were any weaker, it wouldn't lift the airplane; any stronger, and it would burn up the landing zone or carrier deck.

To keep the airplane balanced in vertical takeoffs and landings, its heaviest element, the engine, had to be at the center of the fuselage. (If it were in the tail, the normal place, it would pull the plane down tail first.) This made the body of the airplane look barrel-shaped and chubby—the aesthetic consequence. But it did something far uglier. To get enough air into the engine, and for reasons relating to the stealthy design, the Boeing plane had an intake at the front that looked like an oversized, gaping mouth. In the mid-1990s the plane was called a flying frog or a pelican. By the late 1990s it was known inside the Pentagon as "Monica." When Boeing produced promotional videos of the plane, for an advertising blitz before the ultimate downselect, it hired digital artists who had worked on *Titanic* to substitute another plane's outline for Monica's. The switch was defensible, because Boeing had been clear about its intention to alter parts of the design—though not the mouth, which was still visible in the video—if it won.

No one with a prominent and official role in the JSF program will say that a factor as frivolous as looks made the slightest difference in the outcome. Darleen Druyun, a powerful civilian official at the Pentagon, ridicules the idea that "emotion" would color a multi-billion-dollar decision. "I've had a number of officers come down and say, 'Druyun, have you *looked* at the airplane?'" she told me, referring to a previous case in which she favored an "ugly" model. "I said, 'Yes, I've looked at it, and I've flown in it, and I want to tell

Boeing's Joint Strike Fighter



you something. *Looks can be deceiving.*” Mike Hough, a boisterous Marine Corps general who was directing the JSF program when the final decision was made, sputtered when I asked if Boeing’s plane was too ugly to win. “*Looks* made the difference? Not even goddamn close! I want to tell you about the old bottom feeder”—a catfish image for the Boeing plane. “It performed *flawlessly*. It was incredible, the performance of that airplane. It was an amazing machine, and it still is.” (The other, though, was even better.)

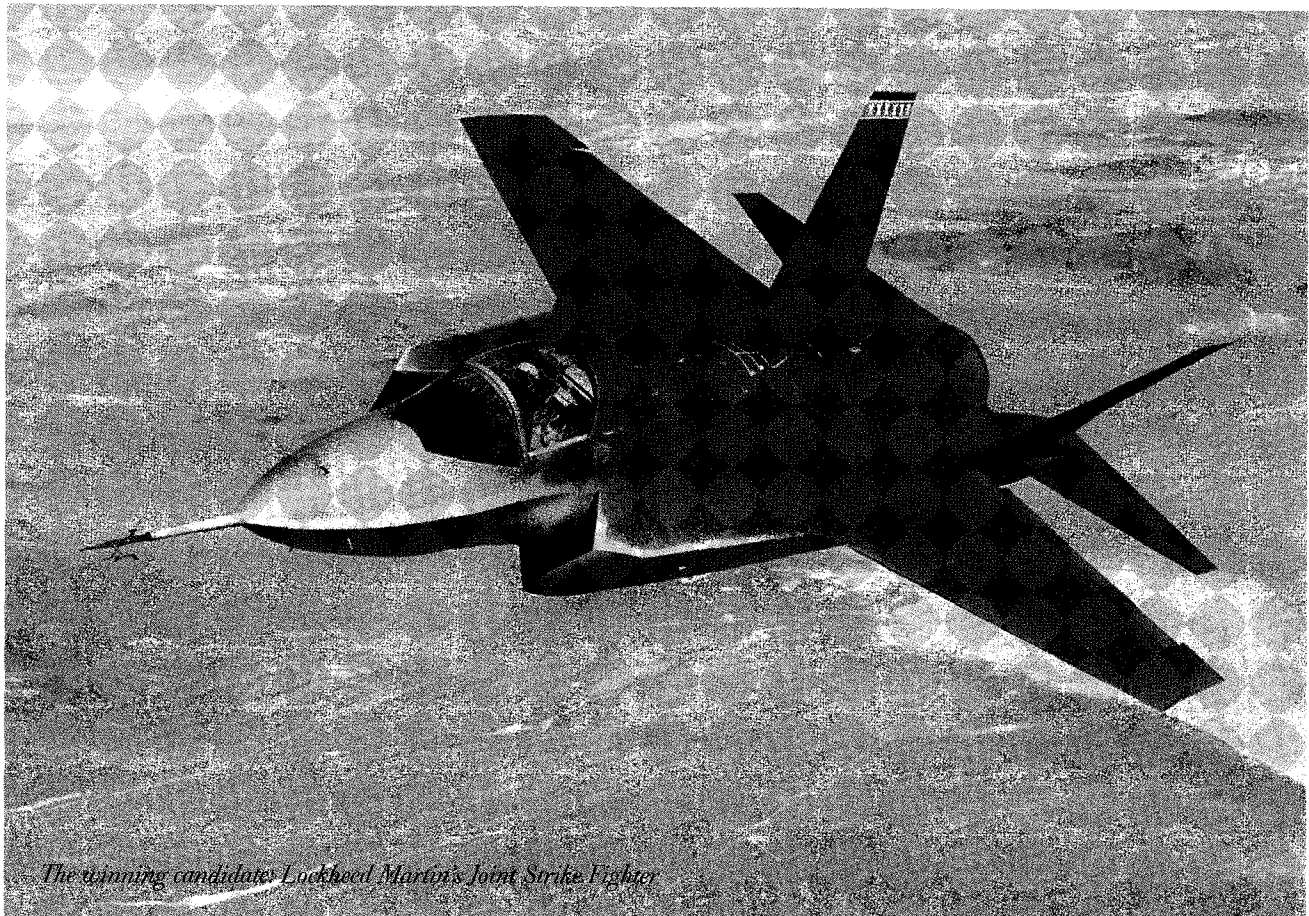
People without official roles in the process are not so sure. Manfred Von Nordheim, a dashing German who directs the U.S. office of the European aerospace consortium that builds the Airbus, the Eurofighter, and other products, says: “To me it was obvious. If you looked at the two planes, that one was not going to fly. It was like the Edsel. You wonder, didn’t someone say, Wait a minute! This doesn’t look right?” Helpful as my contacts at Boeing were, no one was eager to claim credit for the design of the plane.

On the outside Lockheed Martin’s entry looked like a normal, jazzy fighter plane. Its oddest feature was inside. In the early 1990s Paul Shumpert and Paul Bevilacqua, two engineers at the company’s research site in the remote Mojave Desert of California, did the research leading to a patent for a wholly novel approach to the vertical-lift problem. Their solution had never been put into practice. But if it worked, it would give the Lockheed Martin airplane an enormous edge. In what everyone involved recognized as a “bet the company” decision, Dain Hancock, the president of the aeronautics division, approved an all-out effort to make the new “lift fan” propulsion system work. Hancock and his colleagues believed that if it succeeded, they had a very good

chance of winning the JSF competition. If it failed, they would be out of the running. And because it might be decades before the next fighter program was launched, they could be out of the fighter business for good.

The lift fan was essentially a means of harnessing some of the power of the jet engine and using it to lift the plane straight up. The Air Force and Navy versions of the Lockheed Martin plane would have normal jet turbine engines. But in the Marine Corps version a shaft would be connected to the front of the engine and would spin, like the engine’s turbines, at thousands of revolutions per minute. The patent for the lift fan covered a system for connecting this whirling shaft, through clutches and a gearbox that joined two shafts at a ninety-degree angle, to a very large fan that would take in air from vents at the top of the plane and then whoosh it out the bottom. This air would provide a cushion on which the plane hovered.

The lift system sounds unlikely as described, and it looked quite Rube Goldbergian in diagrams. It also included a device that seemed to come straight from a Tim Burton movie: a tailpipe that could be made to snake around from its normal straight-back position to point down and support the rear of the plane, driving vertical ascents and descents. Through a kind of alchemist’s magic, the same sort of engine that was laboring to hold up the Boeing model could produce a comfortable margin of lifting power for Lockheed Martin. The explanation was that a large volume of air, moved at relatively slow speeds by the fan, could provide a large amount of lifting force. The practical significance of the approach was that it would give the airplane much more flexibility and allow for greater thrust—all of which meant the plane could oper-



ate with heavier loads, in worse circumstances, with greater confidence of actually being able to fly straight up. Also, since the air shooting out beneath the plane was at normal atmospheric temperature and was not a jet blast, it would not be setting runways on fire or melting carrier decks.

All that would be true if the never-before-tried fan worked. Through the first few months of tests gearboxes exploded and drive shafts snapped and oil spewed everywhere. But Lockheed Martin had made its choice, and it kept hoping for the best.

SHAPING UP THE SKUNK WORKS

As the JSF competition intensified in the late 1990s, the only thing that mattered as much as the success of the lift fan was the opinion of Darleen Druyun. Druyun's official title is principal deputy assistant secretary of the Air Force for acquisitions and management. Through the past decade she has been one of the most important civilians at the Pentagon, and she is clearly the most influential woman. She started working as an Air Force contract negotiator more than thirty years ago, soon after she graduated from Chaminade University, in Hawaii, and she has overseen government projects ever since. A former colleague described Druyun to me as "embodying the bureaucratic approach, in the positive sense of the term"—that is, believing in procedure, facts, rules. Her detractors de-

scribe her as haughty and cold. When NASA had budget and management emergencies after the *Challenger* explosion, Druyun was dispatched to be its chief of staff. She returned to the Pentagon in her current job at the beginning of the Clinton Administration, and no signs suggest that she is about to leave. "There is a category of savvy managers in the government that industry lives in fear of," a veteran Pentagon official told me. "That is her. People don't take her on because she is too tough to take on." Another man says, "People live in fear of her, because she not only speaks her mind but they know that in any argument on the merits, she will prevail over the political people. She always knows more."

Darleen Druyun is in her mid-fifties, tall and long-limbed, with dark-brown hair and eyes. When I met her in her office, my strong impression was of an experienced principal at a first-rate public high school who had heard it all and was not taking any guff. She talks in a deliberately patient way, just short of condescending, punctuating her statements with "Okay?" as if challenging the listener to disagree.

In the two years leading up to the final downselect Druyun was the civilian in charge of the JSF. Obviously, many others played important roles. Jacques Gansler, the No. 3 civilian official at the Pentagon in the late 1990s, supervised all weapons programs and paid close attention to this one—the largest. William Cohen, the Secretary of Defense during Clinton's second term, intervened to defend

the JSF's potential when congressmen or others were skeptical. But day by day Druyun was on the phone to Boeing and Lockheed Martin, marking their progress against checklists and taking them to task if they were heading over budget.

"We set up these special computer networks," she told me. "Literally from my computer on my desk I can dial right in and look down at every single piece of paper they have. Every single management report. Nothing is hidden from us, okay? It's called *full disclosure*. There's nothing magical about program management. A lot is just common sense. You don't want surprises. If there is going to be bad news out there, okay, let's float it out. Let's be rational and figure out what is the issue, and how to solve the issue."

Druyun had ample opportunity to apply this philosophy in 1998 and 1999. By then each of the companies had received more than \$1 billion to build two flying demonstration models of its airplane. Boeing said that it would have the models done on time—but if it won the contract, the airplanes it actually built would look different, because it had discovered problems with the shape of the wing and the tail. Within the terms of the competition this was acceptable, because the first two models were required only to demonstrate that they could fly and hover in certain ways. Boeing claimed that in the ways that really mattered, its models would be *more* representative than Lockheed Martin's, because Boeing was building them with the same new and advanced production equipment it would use for the actual fleet, whereas Lockheed Martin was building its two models on its regular equipment. (Lockheed Martin built working models of the production equipment it would use if it won.) Nonetheless, the planned design change didn't help Boeing's prospects.

Lockheed Martin's problems, apart from the tricky lift fan, fell under the general heading of bad management, as the company's officials now concede. Through 1999 Lockheed Martin's management disarray worsened, and Darleen Druyun seemed increasingly exasperated with the company's officials, including its CEO, Vance Coffman. At one bitter meeting with Lockheed Martin officials in 1999 Druyun, according to a widely circulated memo by someone present, said that the company had lost an earlier contract for a satellite because its design was "crappy." She warned them against any funny business with the JSF cost figures. "If I detect BS," she warned, "you go to the bottom of the chart."

The most acute problem was the company's apparent inability to control costs. The two flying models were being developed at the Mojave Desert research site, the "skunk works," which had operated for decades as an independent fiefdom. Under its creator and former director, the renowned designer Kelly Johnson, the assumption had been that the corporate masters left the skunk works alone, and every so often it came up with brilliant new airplane ideas. Which it did: the U-2 and SR-71 spy planes both

came from Lockheed's skunk works. No one there was accustomed to answering precise accounting questions from corporate headquarters—let alone having a Pentagon official tap into the books from her computer.

"There was one point [in 1999] where it was strongly urged that we terminate Lockheed and give the program to Boeing," Jacques Gansler told me recently. "Even if to do that we had to give Boeing the Lockheed Martin design to build. The skunk works had just lost cost control. The management was in terrible shape."

Druyun told me that she had never favored actually pulling Lockheed Martin from the project. "There was some tension about Lockheed's management of this program," she said. "But I also have to tell you there was tension with Boeing as well. The answer was the process that we used. We went to them on a very regular basis. We laid out what the issues were. We were looking at cost overruns with both contractors in the neighborhood of \$150 to \$200 million each. We sat down with them and said, We have *no more money* to bring to the table, 'kay? It's yours to fix."

Druyun's partner in delivering the message to the companies was Mike Hough, the military director of the program office in the two years leading to the downselect. Hough and Druyun are the same age, but in most other ways they are opposites. Hough graduated from the Naval Academy in 1969 (in the same class as Tom Burbage) and then became a fighter pilot; he is short, burly, wisecracking, profane. Every few minutes during our interview Druyun would tell me, "You just have to look at the facts ...". At least as often Hough summed up situations by saying, "It was a *leadership* problem ...".

But Hough's version of the shape-up message to the contractors reinforced Druyun's. "What really happened here was the rules changed," he told me recently. "They had to understand that no longer were we going to say [he shifted to a high, mincing voice] 'Oh, my! You're running out of money? We'll go print some more.' No way! I said, 'Your costs are going up? Well, you better find a way to bring 'em down. Talk with your suppliers, make it work.' People and organizations only change after a 'significant emotional event,' and they went through one, which helped them see they *had* to change."

Hough and Druyun were not the only ones noticing problems. The Congressional Budget Office warned in 1999 that the program could go 50 percent over its target costs. In another report the General Accounting Office recommended that the program be put on hold for months or years, while complicated technology, including the lift fan, was worked out. A few congressmen proposed hearings on delaying the program.

From William Cohen on down, the Pentagon leadership resisted the idea of a moratorium or an extension. This was not just the normal pork-barrel instinct to protect a program—an instinct that showed up strongly in defense of the

ever costlier F-22 and the Marine Corps' crash-prone V-22 Osprey. Gansler, Druyun, and Cohen himself argued that delay would be the first step down the death spiral for the Joint Strike Fighter. And it would leave the Marines and the Air Force with no replacements for their aging fleets.

The Pentagon leadership could see something else as well: after the warnings from Druyun and Hough, the contractors had gotten the message. Lockheed Martin shook up the management of its JSF team, putting Tom Burbage in charge and persuading the skunk works to act like part of a larger organization. The gearbox for the lift fan stopped blowing up. Soon the company had every indication short of a real flight test that the novel lift fan would work. Meanwhile, Boeing concentrated on the advanced manufacturing system that it thought would be the strength of its proposal. Its advertising claimed that the Boeing JSF would start on "Day One, not Square One"—deriding Lockheed Martin's need to create a new production process.

There was one major cost setback. Late in 2001, after months of telling the services that if they wanted any new feature on the plane (more weapons capacity, longer range) they had to give up something else of equal cost, Hough, Druyun, and their colleagues accepted changes in the JSF's design, and in its 10-million-line software coding, that would add about 10 percent to the cost of each airplane. (Why so much software? Because the engine, the weapons system, the elaborate radar, and countless other features are run by computer.) A series of such alterations would start the death spiral; so far, this change has been an isolated case. And both contractors were developing a more accurate understanding of just what the costs were. Late in the process Druyun laid out three sets of projections for the entire cost of the program over the next twenty-five years. One set of figures came from the Pentagon's auditors, and one from each of the two companies. The projected totals differed by less than a tenth of one percent.

Through 2000 the companies put their efforts into actual testing, and they went from strength to strength. Boeing's first test flight was in September, Lockheed Martin's a month later. Each was a success. The following June both companies were ready for the most demanding flight test: the vertical takeoff and landing. By chance each company's most critical test flight took place on the same day, June 24, 2001, on opposite ends of the country. At Patuxent River Naval Air Station, in Maryland, the Boeing airplane made a normal takeoff, and once flying it slowed until it was no longer moving forward and held a hovering position. Near Palmdale, California, Lockheed Martin planned a strictly vertical takeoff to demonstrate the power of its lift fan. The pilot planned to take the airplane only a few inches off the ground. "Everybody was standing there going 'God, I hope it works this time,'" Tom Burbage later told George Wilson, of *National Journal*. As the pilot pushed in the controls, the plane rose smoothly—all the way to twenty-five feet, where it hovered

for thirty-five seconds before coming down. Burbage's team knew that the sensitivity of the controls needed adjustment, but also that the fan had power to spare. In July, Lockheed Martin sent its plane on a tour de force called Mission X. It made a short takeoff, accelerated and broke the sound barrier, and then returned and landed vertically—a combination no airplane had ever performed before.

Through the summer pilots carried out a successful series of flights to provide "test points" showing that the planes had met the program's requirements. "Did they fly it twice a week, like most experimental airplanes?" Mike Hough asked me rhetorically. "Noooo, they flew it three times a day. They flew it *five times* a day! I had to take the keys away from them. People were stunned. Ordinarily it would take four or five months to get the test points. We had them in twenty days each, Boeing and Lockheed alike."

Hough probably has the evangelist's air by nature, but he had a specific reason for it in early 2001. Objectively, all aspects of the program had been improving through the previous year. Management was straightening out. The hardware and software were functioning as planned. But political support for the JSF appeared to have ebbed. A normal defense program, such as for the building of a ship or a tank, has automatic backing from the military service that "owns" it, and also from politicians in the districts where it will be built. Chuck Spinney, the civilian analyst, has called this military version of pork-barrel spending "political engineering" and notes that most programs deliberately choose suppliers in as many congressional districts as possible, in order to maximize support. The F-18, for example, has subcontractors in every state but Wyoming. But as a joint program, the JSF had all-out support only from the Marine Corps, which couldn't pay for it single-handedly. The plane was in constant peril of being abandoned by an indifferent Navy or stabbed in the back by the Air Force in an effort to save its cherished F-22. The program was expected to have direct suppliers in only half the states even when it was up and running, in part because of extensive partnerships with European companies.

Tom Burbage's team at Lockheed Martin made daily entries on two charts showing their prospects. One was "P-Win"—the probability that Lockheed Martin would win the contract. The company still considers this chart confidential, but clearly the P-Win rating shot up when it became clear that the lift fan actually worked. The other chart was "P-Go"—the probability that the program itself would survive.

During the presidential campaign P-Go was low. If the Democrats won, the Lockheed Martin team reasoned, sooner or later they would cut the defense budget. And if the Republicans won, the JSF could still be vulnerable, because it was a "Democrat" airplane. During the campaign George W. Bush said that the way to improve the military was to "skip a generation" to futuristic weapons, such as remote-controlled unmanned planes. In theory this could be a reason

The Marine version of the Lockheed Martin fighter



to skip the F-22, or the Navy's latest-model F-18. In reality the argument was more likely to be turned against the JSF.

When Donald Rumsfeld's team moved into the Pentagon, it was not clear whether Rumsfeld's program of "transforming" the military would embrace the JSF, with its lower cost and advanced production systems, or exclude it. At a systems-review briefing in July of last year, Hough seemed to surprise Rumsfeld and his deputy secretary, Paul Wolfowitz, by giving his standard motivational pitch for the JSF rather than calmly analyzing their questions about why this program was necessary and practical. But two months later the country was at war, Rumsfeld and Wolfowitz were preoccupied, and all programs went forward. The P-Go line shot up.

WILL IT TAKE OFF?

The companies knew that the final selection process, organized by Darleen Druyun, would be thorough to a fault. The 200-plus civilian and military members of the selection panels took oaths of impartiality and lifelong confidentiality. The contestants were judged on three main criteria: affordability, both in the initial cost of the plane and in long-term operating expenses; the performance of the flying models; and each company's record in past programs. Some 500 aspects of each company's pro-

gram were rated according to these criteria. Darleen Druyun showed me a few of the ranking sheets, and said that the complete results totaled tens of thousands of pages.

While the selection teams pored over the results, the companies couldn't help themselves: they intensified their lobbying and advertising campaigns. Lockheed Martin took one floor of an office building in Crystal City, just across the Potomac from the Capitol, and filled it with hardware and mock-ups of the JSF. Politicians, staffers, foreign dignitaries, and reporters could make appointments to get a briefing and "fly" the plane in a full-scale cockpit replica. Both companies spent heavily on broadcast and print advertisements in the Washington area in 2001. A minor purpose of the ads was to deal with the issue of the plane's appearance. "The New Look of Lethality," an ad would say, or "The New Look of Affordability." "From some angles, [the plane] looks menacing," Thomas Young, the director of the JSF ad campaign for Boeing, told me in St. Louis, after Boeing lost. "We thought it could be an advantage to have an airplane that looks *mean*." But the major purpose of the ads

was to stress "facts," "reality," "delivery." Boeing had already developed the machines that would produce the plane, and Lockheed Martin was only promising that it could. For its part, Lockheed showcased its sleek-looking airplane, with the reminder that it had a brand-new propulsion system that worked.

Why did either company bother, given that Druyun's team knew far more about the airplanes than it could learn from any ad? The rationale was that it could not hurt to remind congressmen, journalists, and the rest of the capital of the virtues of the product. But as in any military program, advertising had other benefits. "It would be safe to say that there was a great desire from many people at the Pentagon for us to advertise and to be out there, as part of selling the program," Doug Kennett, the head of communications for Boeing's military-aircraft division, told me. "A lot of our early advertising was selling JSF, no matter who won."

After the announcement Darleen Druyun told Jerry Daniels, the president of Boeing's military-aircraft division, that his project was rated A. But Lockheed's was A+. Hough likes to say that he originally feared having one candidate that rated four on a ten-point scale and another that rated six. "I got a nine and a ten," he says. Lockheed won for the reason that Dain Hancock and his colleagues had foreseen:

the lift fan made the airplane perform better. Boeing's edge in manufacturing could not overcome this edge in design.

What, exactly, has Lockheed Martin won? "They have bought themselves the opportunity to compete, continuously, through twelve straight annual funding cycles to keep this thing alive," one civilian analyst told me. "It's going to be tough, since the airplane is not exactly what anyone wanted, and more-pressing things will come along." One of the new things sure to come along is unmanned combat aircraft. Many members of Boeing's JSF team have been switched to its unmanned-vehicles project. When meeting with several of them, I mentioned a nightmare scenario for Lockheed Martin: that Boeing, while playing the good loser, would get its revenge by successfully promoting unmanned vehicles as the real way to make defense affordable. The Boeing men all laughed when I said this. Of course that is what they have in mind.

The more important question is What, so far, has the country won? The most optimistic interpretation would be that the JSF represents the introduction of the best, real parts of the New Economy to the messy business of building military machines. Talking to Tom Burbage in Washington and in Fort Worth, I kept being surprised by how much he sounded like the high-tech executives I have interviewed in recent years. "You have to create an environment where people can succeed," he would say. "Too often you put people in a situation where they can't really succeed, and when they don't, you hammer them." He talked about inviting bids from foreign suppliers, on the "best athlete" principle. But of course Burbage *is* a high-tech executive. After Lockheed Martin won the contract, Burbage took seventy team members on a weekend retreat where he showed them a large mock-up cover of *Fast Company* magazine dated five years into the future. "JSF: Simply the Best!" the cover line read. He asked his associates to think through the steps that would lead to such success. (He considered preparing another cover, "JSF: The Smoking Hole," but didn't go through with it. *Fast Company* learned about the mock-up, got in touch with Burbage, and ended up doing a real cover story about him this spring.)

In ways that go far beyond retreats and motivational talk, the production of this airplane could be a large step forward. Here are two illustrations, from among dozens of possibilities.

Most military airplanes are handmade to a degree that is hard to believe if you haven't seen it. Putting together a wing for a brand-new, top-of-the-line F-18 involves thousands of rivets and hundreds of parts. The final assembly of the wing takes place on enormous tooling structures that force the various spars, ribs, and skin pieces into proper alignment, so that they can be fastened. This is the way cars were built thirty years ago, and why they rattled. At the Lockheed Martin plant in Fort Worth, under the guidance of Martin McLoughlin,

the JSF's director of manufacturing, I saw a demonstration of modern manufacturing systems like the ones already in place at Boeing. The wing is formed as two great halves, and the joined halves are matched so precisely to the fuselage that they snap in. The computer industry as we know it would not exist were it not for high-speed, high-precision assembly, nor could America's car makers compete with Japan's had they not used these techniques. This is the first time these methods will be used for the military.

The second example is stealth. The most expensive military plane ever built is the original stealth bomber, the B-2. Each B-2 cost \$1 billion. Today, adding "low observable," or stealthy, qualities to an airplane is practically a no-cost option. So much has been learned about how to design wings, engine intakes, and other features that there is little point in building non-stealthy airplanes.

The JSF also represents the New Economy in that it is a global airplane. Richard Aboulafia, the aviation analyst, says that if the JSF meets cost targets, it might well be the only viable fighter plane on the world market a generation from now. "As a libertarian, I eschew any targeted industrial policy," he told me. "But if I were the U.S. government, I would think this was irresistible. If you make the assumption that this is the same economic class as the F-16, there's no reason you couldn't sell to twenty-five countries, maybe more."

These projections fit the "Simply the Best!" story. But naturally there's another possibility. Even if the program somehow keeps meeting its cost targets, the JSF planes coming into service won't arrive fast enough to replace the planes that are getting old. In the meantime, the United States will spend several hundred billion dollars maintaining a fleet that becomes smaller by the year. And if the program can't meet its targets, everything changes. The export market dries up. The death spiral begins.

The fatalistic view of the JSF's prospects rests not on what has happened to this project so far but on what has happened to virtually every other project the Pentagon has undertaken. Early this year I spoke with a man who has been involved in Defense Department budgeting since the 1960s. In theory the JSF was a good idea, he said. So far it had stayed surprisingly close to its targets. But the weight of history suggests that obstacles are still ahead. Of the dozens of weapons programs this man had observed through their development, how many had gone into service at or under the cost specified when Congress initially approved them? None. How many had met the higher cost target authorized when they moved from early development to actual production? None. How many had gone into service in the numbers foreseen when the plans were approved? None. So if the JSF meets its targets, it will do something no previous weapons program has done. That is a sign of this program's ambition—and of the odds against it. ■

James Fallows is The Atlantic's national correspondent. His most recent book is Free Flight: From Airline Hell to a New Age of Travel (2001).

THE CHARACTER OF CATS

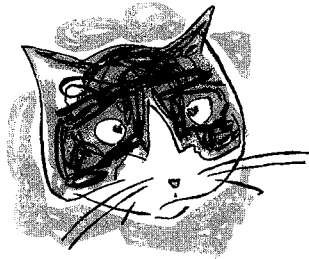
*The mystery is not why they're so antisocial
but why they're social at all*

BY STEPHEN BUDIANSKY

Illustrations by Ward Schumaker

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For some time now I have been wondering why—to speak unscientifically—my orange barn cat, Shawn, thinks he is a dog. He follows me to the mailbox, he follows me on walks, and every Halloween without fail he follows my children door to door trick-or-treating.



Scientifically speaking, it is perfectly clear why a dog acts like a dog. Like all normal domestic animals, dogs are the descendants of an intensely social species. Their instinct to seek out the company of human beings is an attempt to reconstitute an ancestral social structure that is etched in their genes. They have inherited finely tuned norms of conduct for getting along with other members of the pack.

Cats defy all the normal rules about domesticated animals. The domestic cat's wild progenitor, the African wildcat, is completely solitary in its natural state. Female wildcats live in exclusive territories of, on average, a few hundred acres, which they zealously guard against intrusion by any other females. The territory of a male wildcat often overlaps with those of several females, but almost no overlap occurs with the territories of other males.

This ancestral solitariness clearly explains why there are no Seeing Eye cats, guard cats, search-and-rescue cats, bomb-detecting cats, drug-sniffing cats, escaped-convict-tracking cats, sheep cats, sled cats, gun cats, obedience-trained cats, Frisbee-catching cats, or slipper-fetching cats. But by the same reasoning there ought to be no lap-sitting cats or fish-treat-begging cats, and certainly no cats like Shawn.

Yet everyone knows cats like Shawn. And although pet cats come in a huge range of personality types, from fraidy-cats to bossy or gregarious cats (scientific studies have actually confirmed this), the behavior of the average domestic cat is markedly different from that of the average wildcat. All domestic cats do things the average wildcat wouldn't be caught dead doing. And they do them even when their ancestors have had little contact with human beings for generations.

Most domestic animals are social not only because their

wild ancestors were social species; they have also over the course of domestication undergone marked genetic changes that have made them increasingly dependent on people. They are genetically less territorial, less aggressive, and more cooperative than their wild counterparts. Yet it's virtually impossible to find

even a hint of a genetic basis for the friendliness of the domestic cat—or even to see how a “friendliness gene” could have found its way into the cat in the first place.

Some scientists have sought to explain the domestic cat's gregariousness by linking it to the behaviors of other members of the cat family. Lions are a group-living species. So are cheetahs, at least a bit—they sometimes form small groups. But the relevance of the behavior of these social cats to the domestic cat is hard to see. The evolutionary lines leading to the big cats and to the domestic cat branched apart some nine million years ago—several million years before chimpanzee and human lineages diverged. Beginning around 12 million years ago the felid family underwent an explosive diversification, giving rise to the thirty-seven species that today cover the earth's geographical and ecological spectra, from Siberia to South America, from Arctic tundra to desert to tropical forest. This diversification produced a correspondingly wide range of physical and behavioral types. The members of the cat family vary in weight from about three pounds to 650; their markings vary from striped to spotted to solid black, and their coats from long to almost nonexistent. It is no more logical to attribute the domestic cat's sociability to the lion than to argue that a domestic cat really ought to weigh a quarter of a ton and hunt zebras.

What makes the domestic cat's social behavior stranger still is how little the domestic cat has drifted genetically from its wild counterpart. Dogs, cattle, sheep, goats, and most other domestic species are so altered from their wild relatives that they qualify as biologically distinct species. (Most of these wild relatives are also in serious ecological trouble; in fact, one reason dogs, horses, cattle, and sheep have succeeded as

domesticated species is that from a Darwinian perspective they had no choice—wolves, Przewalski's horses, aurochs, and mountain sheep began to lose their habitat at the end of the Ice Age and today are all endangered or extinct. The wildcat, however, is not even close to endangered.) If a trained expert is shown a wolf skull and a dog skull, he will have little difficulty telling the two apart. But when zoologists, natural-history-museum curators, hunters, veterinarians, game wardens, and professional naturalists were asked to distinguish between specimens from a wildcat and a domestic cat, they were right only 61 percent of the time. That's hardly better than what ukulele players, avocado growers, and automobile designers could have done by flipping a coin.

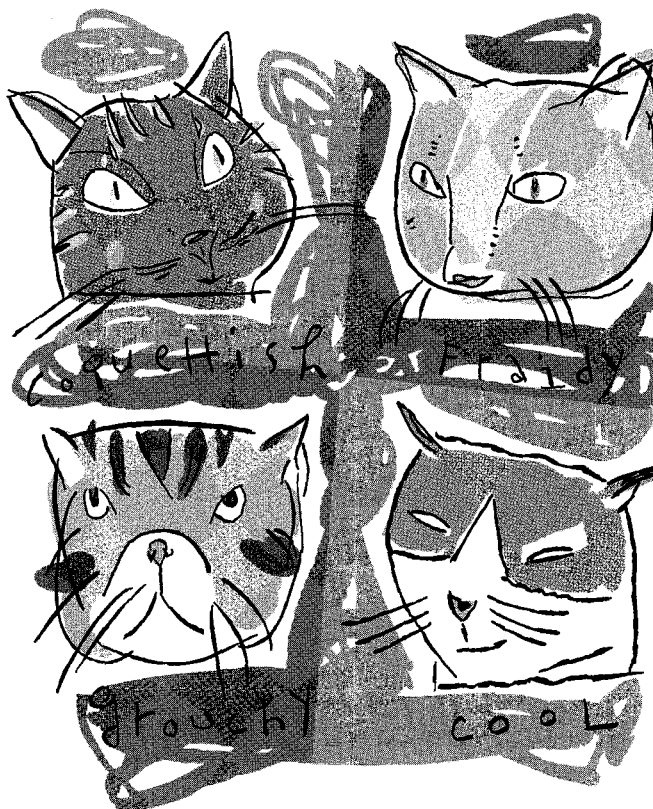
Domestic cats come in colorations (orange, white, calico) that African wildcats do not, but genetic studies have found that this difference is skin deep—a dozen or so genes account for it. Beyond that, the genetic profiles of domestic cats and wildcats are indistinguishable. Most people seeing an African wildcat would indeed think “pussycat.” Even the normal wildcat coloration—striped, or “mackerel,” tabby—occurs frequently in domestic cats, whereas in other domestic species wild coloration is rare (the dun-colored domestic horse is one example) or absent altogether.

Weirdest of all about domestic cats' sociability is that these cats not only will tolerate living in social groups but will spontaneously form them. Feral domestic cats are often found in groups of many females living adjacent to a food source, such as a dairy barn or a dump. These colonies frequently have had no “owner,” or even much human contact, for generations. The members of such groups will cooperate in the rearing of their young, even nursing kittens that are not their own. Wildcats never exhibit such behavior, even when concentrated food sources are available. They are true loners, period.

The remarkable answer to this conundrum seems to be that the anomalous social traits of the domestic cat are inherited culturally, rather than genetically. Once a sufficient number of wildcats had been brought up by people, the species passed through a cultural trapdoor. (It was probably the ancient Egyptians who first went out and captured the necessary critical mass of cats from the wild.) House cats ever since have acquired a sociable tendency as a kind of cultural knowledge that descends from mothers to kittens in early infancy.

The way that cats can acquire this knowledge has been elucidated in laboratory experiments with kittens. Kittens that are brought up in social groups, whether human or feline, and therefore become accustomed from infancy to interacting with unrelated adults, retain that sociability throughout their lives. Kittens brought up only by their mothers, without social contact with strangers (cat or human), remain loners as adults, and act much more like wildcats.

For example, in studies in which kittens of different ages



were handled over the course of several weeks and then tested later for tolerance of being held and willingness to approach a person, those that had been handled beginning at two or three weeks of age scored much higher than those first handled several weeks later. Cats that had been handled from an early age would cross a room and approach a seated person in nine seconds, on average, from the time they entered, whereas cats first handled at seven weeks took about forty seconds. Cats that had not been handled at all in kittenhood took the same amount of time—about forty seconds. These studies suggest that it makes little difference whether kittens are handled from an early age to seven weeks or from that same early age to fourteen weeks. In other words, there seems to be a critical window from about two or three weeks to seven weeks of age when kittens are uniquely open to learning to be sociable. (This period starts earlier and ends earlier, and more abruptly, than the prime socialization period for puppies.) Kittens become more fearful as they approach their third month of life; for cats that have not by then had a chance to establish friendly relations with human beings, that may be a serious barrier to their ever doing so.

Socialized cats may be willing to be sociable, but they still don't have a lot to work with. Dogs and other truly social animals are born with a complete toolbox for social interactions. Dogs especially know how to invite attention and deflect hostility (whining, rolling over, licking, gently pawing). Cats, when they crack open their own social toolbox, find only a few broken hammers and rusty



wrenches. But they have done a remarkable job of adapting the tools they have to fit their altered social circumstances.

There are several circumstances in the natural life cycle of the wildcat during which the cat does have good reasons to act socially with others of its kind: infancy, in which kittens live as a group and interact in a variety of ways with their littermates—including play, a behavior that is a distinctly youthful trait in many mammals; mating, in which males and females are briefly together; and the raising of young, in which the mother performs a variety of important social roles, including teaching kittens to hunt. Social interactions that are common in all domestic cats, such as playing with, rubbing against, grooming, and lying close to familiar cats and people, appear to be behavioral overflows and hodgepodes, left over from those circumstances in which wildcats are social.

Take the adult cat's frequently seen behavior of placing dead rodents, birds, and reptiles at the back door. This surely has its roots in the maternal instinct to share food with offspring, which is powerful enough to overcome the mother cat's competing instinct to eat the prey herself. When her kittens are a few weeks old, a mother cat will begin to bring killed rodents back to the nest; by about four weeks she will bring live rodents, release them in front of the kittens, and allow the kittens to try to seize the prey themselves. If they fail, she will sometimes recapture the rodents and release them again. (This explains a cat's propensity to play with a live animal it has caught, rather than to neatly dispatch and consume it.)

In leaving dead animals for its owner, the cat is in one sense treating a person as an honorary kitten. But it's unlikely that the cat literally thinks of its owner as a kitten; rather, this is one of the few ways adult cats know of dealing with any social presence in their lives. The only thing that will normally trigger the food-sharing instinct in wildcats is the presence of a litter of kittens. (Male wildcats probably have the instinct in vestigial form, but in the wild it is never activated, because males do not help to raise the young.) The potential triggers in domestic cats are frequent and varied, and adult domestic cats living in social groups on farms have even been observed to share prey with other adult cats.

Another example of a behavior whose significance has expanded is the purr. The cat's distinctive purr has long been the subject of a great deal of theory and speculation. Some recent authors, apparently having watched too many of those New Age mind-body-connection programs that PBS reruns at fundraising time, have argued that the purr can be a "mantra," or even a manifestation of the euphoria accompanying a near-death experience. The cat's purr is exceptional in some ways, but in fact its evolution and communicative function are perfectly straightforward, and fit well with what is known about similar rumbling vibrations used communicatively by other mammals—such as horses, with their nickering. Many such sounds have their origin in the sounds that mothers and young use to communicate. Significantly, these vibrations travel better through a solid medium like flesh than through the air; often purrs are inaudible but can be felt by someone in contact with the purring cat. Kittens begin to purr when they are a few days old, and they invariably purr when suckling. Mothers also purr while nursing, and that is certainly strong evidence for the purr's basis as the sound of mother-young contact.

Because such sounds are intrinsically reassuring, they frequently become "ritualized" for use in contexts other than mother-offspring communication. Cats use the purr in courtship and to appease a dominant animal. They also may purr when offering a friendly greeting to other cats or to people. The social toolbox of the cat, including its vocal repertoire, is outfitted mostly for territorial confrontation, not affection. Yet in the presence of people, with their comparatively easygoing and noncompetitive ways, pet cats are free to trot out their small collection of cooperative and friendly behaviors.

Following people around is, admittedly, unusual even among pet cats. But cats like Shawn, I suppose one could say, in a sense really do think they're dogs. The only trouble is they're dogs still caught in a cat's body. Their unusual form of cultural inheritance has inclined them to put one paw in the parlor even as their stubborn genetic inheritance has kept the other three firmly planted out in the jungle somewhere. ▀

Stephen Budiansky is a correspondent for The Atlantic and the author of a number of books, including The Truth About Dogs (2000). This article is drawn from his book The Character of Cats, to be published this month by Viking.

HEAVEN

A short story

BY STEVEN BARTHELME

.....

The poet delicately picks his nose while talking on my telephone, his old abraded sneakers up on my coffee table. This is authentic behavior: the poet is proving that he is a poet. At least I assume that's what he's doing. He glances up at me and then continues his picking and his conversation. "... *in this country!*" he shouts into the receiver. It's a joke; he is talking to a poet about a poet. Much laughter. He puts something in the ashtray.

Is he a good poet? He is thought by poetry authorities to be a good poet, but what do they know? I love him, but this does not blind me to the quality of his poetry. In the poem he wrote about me after my death, I wrote the only good line. He was quoting me, but the attribution was somewhat vague. I was dead twenty-one minutes before he got to the typewriter.

My sister, inexplicably, doesn't want to sleep with the poet, though I have offered him to her on several occasions. My sister said she'd design her own therapy, thank you. "He looks like he needs a bath," she said. "He looks a touch gamy—'gamy' is the word."

"Poets prize that look," I said. "He sleeps with women by the dozens," I said.

"Golly," she said.

"Poets get them down any way they can—liquor, B-plus, enigmas."

"This isn't winning," she said.

"Making up for high school," I said.

Heaven. In heaven no hardwood floors and no baseball, and poets caught talking about sports get the rack. Yesterday I saw Jesus in a leather hat.

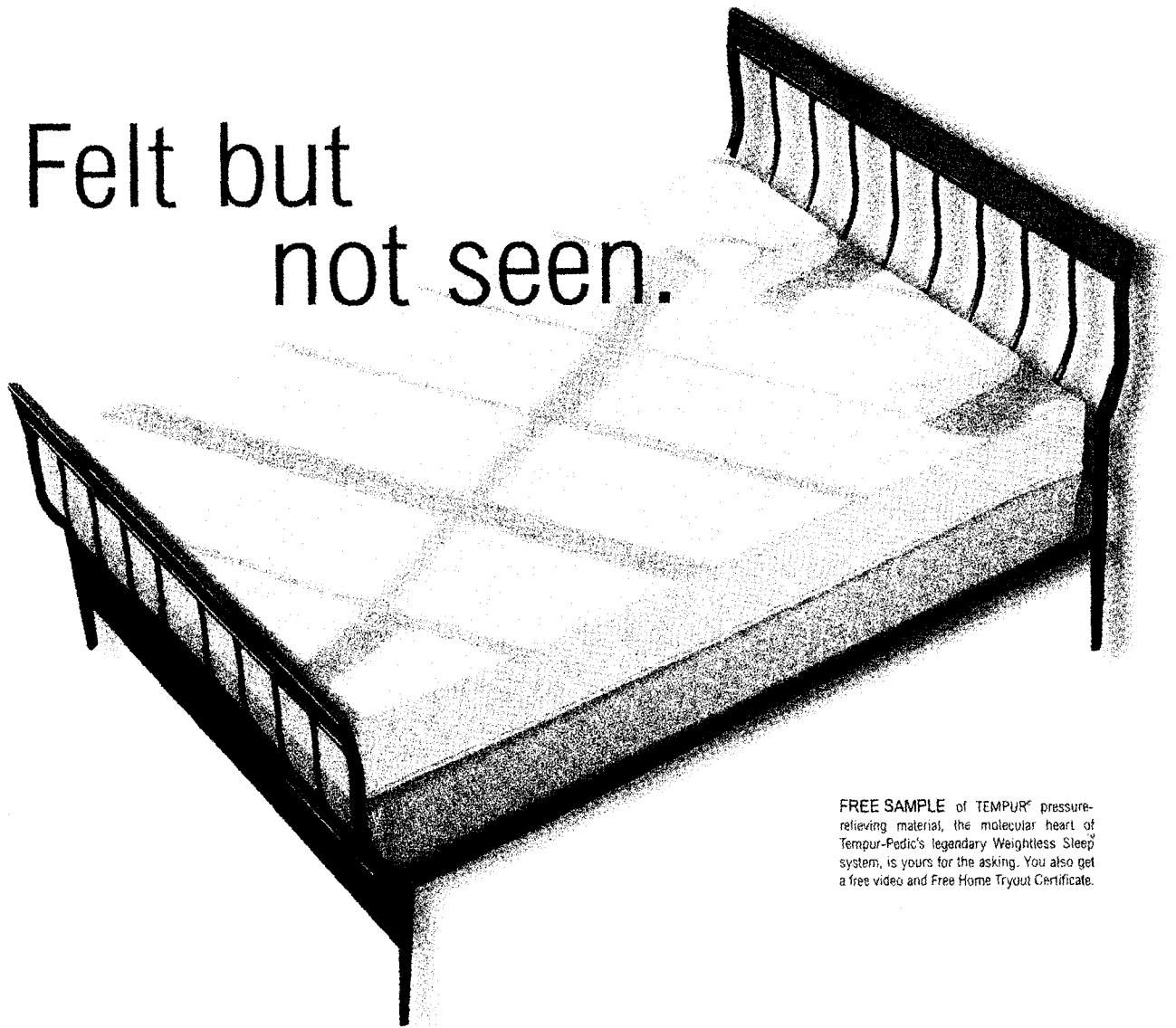
Here is what the poet is saying on the telephone: "... back together? Really? In Vermont she and Bruno and Tige got naked in the lake and *alors, voilà* ..." Another part of it is like this: "... and so her pants were on *inside out, har har har* ..." It's a long-distance call.

Here is what the poet says in the classroom: "Be inexplicable, but not inexplicable. Be emendatious but *not cementatious*." (Not in my dictionary; suspect that's a coinage.) "Be abominable yet abdominal. Make it newt." (I hear poorly, so this could have been "Make it new," although he loathes Pound; it may have been "Make a note"—sometimes he feigns a boffo French accent.) "Oh, and see me after class, Caitlin, Feta, Ang Li, Eschscholtzia, Daisy, Zinnia, Dahlia."

Before being admitted into heaven I suffered ninety days in purgatory, which is how I know he wrote a poem

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about me after I died. It was okay. Some people get the exercise bike. Apparently there's no hell.

The poet drives a Land Rover, of course. Loves his wife. Rubs dogs with great gusto.

In heaven Scotch is blessedly harmless, and my back has finally stopped hurting, and my body's really buffed. Didn't require crunches, either, which are what I got into poetry to avoid. But the poet has written, "All a poet really needs is a six-pack and a six-pack. Grolsch—and really ripped abs," he explained.

"But Grolsch is expensive!" I cried.

"In *this* country," he said.

Heaven resembles a very large Days Inn where God is always wandering around saying, "Have you seen Jesus? Have you seen Jesus?" They argue constantly. Jesus says, "I will destroy the wisdom of the wise?" alluding to something his Father said (First Corinthians—I looked it up), and snaps his fingers. "Fundamentally unserious, Dad."

"I guess I should *frown* more," his Father says, and gives a weary look. The building, heaven, goes on as far as the eye can see, into the clouds. In the lobby in the morning an enormously long white tablecloth appears, with coffee and one lemon Danish, which renews itself endlessly. Angels are everywhere, dancing.

The poet's life has been lived on the edge, in several countries, in his friends' apartments. The poet spent twelve years working for the John Deere Corporation, two weeks in law school in Boston, a night and day in jail on a vagrancy charge (inspiration for the poems, later, in *I Fought the Law*); he once played tambo in a rock band. The band got him started in poetry when he discovered deep feeling and first wore a perm. "Candy from a bébé," he says of that period.

"Only women understand me," he says. With the help of a wealthy coal widow he started *The New Bituminous Review* and filled it with uncanny and haunting work by the editors of other magazines. Then for three years he fearlessly walked up and down Sixth Avenue, filling out grant applications, winning nine. "It's a poet-eat-poet world out there," he says.

They don't only argue. Last week God and Jesus were in the main lobby, rolling on the carpet, laughing about hell. "Who could have known that they'd take that *seriously*?" God said. "They've been worrying about that for two *thousand* years!" He snorted and fell into convulsions of laughter.

"And—and—" Jesus said, wiping tears from his shining eyes, "and we were only *kidding*. God, they must think we're *mean*!" And they walked off slapping their foreheads and kneecaps, and Jesus' hat fell off. His eyes are intensely beautiful, blue. He is very tall.

The poet is thought to have a very good gamy look, I told my sister. One of the top five, among contemporary American poets. "His wife won't mind," I said, "because he's an artist."

"What is his poetry about?" she asked.

"Anguish," I said. "Black woe. Raw, unashamed passion. Black lung. A number of his newest poems shockingly un-

mask the pylorus, where a valve inextricably links man's stomach to his small intestine."

My death came about in this way: I poisoned myself, with loathing. And envy, there was some envy. Mostly loathing.

The poet is off the phone. He has a legal pad and a blue-and-black German pencil, working probably on "Reflux." It's a new one in the Los Angeles Lakers series. "Overweight and eager ..." the poem begins. He pauses, pencil to his lips. He is thinking. I ask if he will stay to dinner, and he slams the pencil down, enraged. "Oh, Christ," he says, "can't you see I'm *working*? What're you having? I'll invite Peesha, Pasha, and Tony. It's all ruined *now*," he says. The pencil is very beautiful. He picks up the telephone.

Jesus comes over to me when I'm out on a chaise beside one of the pools. He's holding a fat red notebook in one hand and two lemonade cans from the vending machine in the other. He hands me one. Frigid. All around us people are getting to their feet. Music is playing somewhere.

"A hat?" I say. "You're never in a hat in the pictures."

"I'm two thousand years old," Jesus says, and pats the leather hat. "I'll wear a hat if I feel like it." He gives a droll smile. "I have you down here for loathing and envy," he says, looking up from the red notebook. "You must forgive him."

"There's nothing to forgive," I say, and take a drink. It's Handel—the music.

"Bo, I'm Jesus. Why are you bothering to lie to me?"

"Yes, sorry, I forgot. Gosh, this lemonade is cold."

Jesus sighs. "That's a nice touch, that '*Gosh*.' A little foolish, considering that you're already in heaven. Still, 'God hath chosen the foolish things of the world to confound the wise.'" He shrugs. "It's in First Corinthians."

"That'd be Chapter One," I say, "verse twenty-seven?"

He glances sharply at me for a second but recovers, nods, and slaps the red notebook on his pants. "You must forgive him."

"Okay. I forgive him."

Jesus looks at me with his brilliant eyes. It's the sort of long, theatrically patient look one gets not from a father but from a beloved older brother.

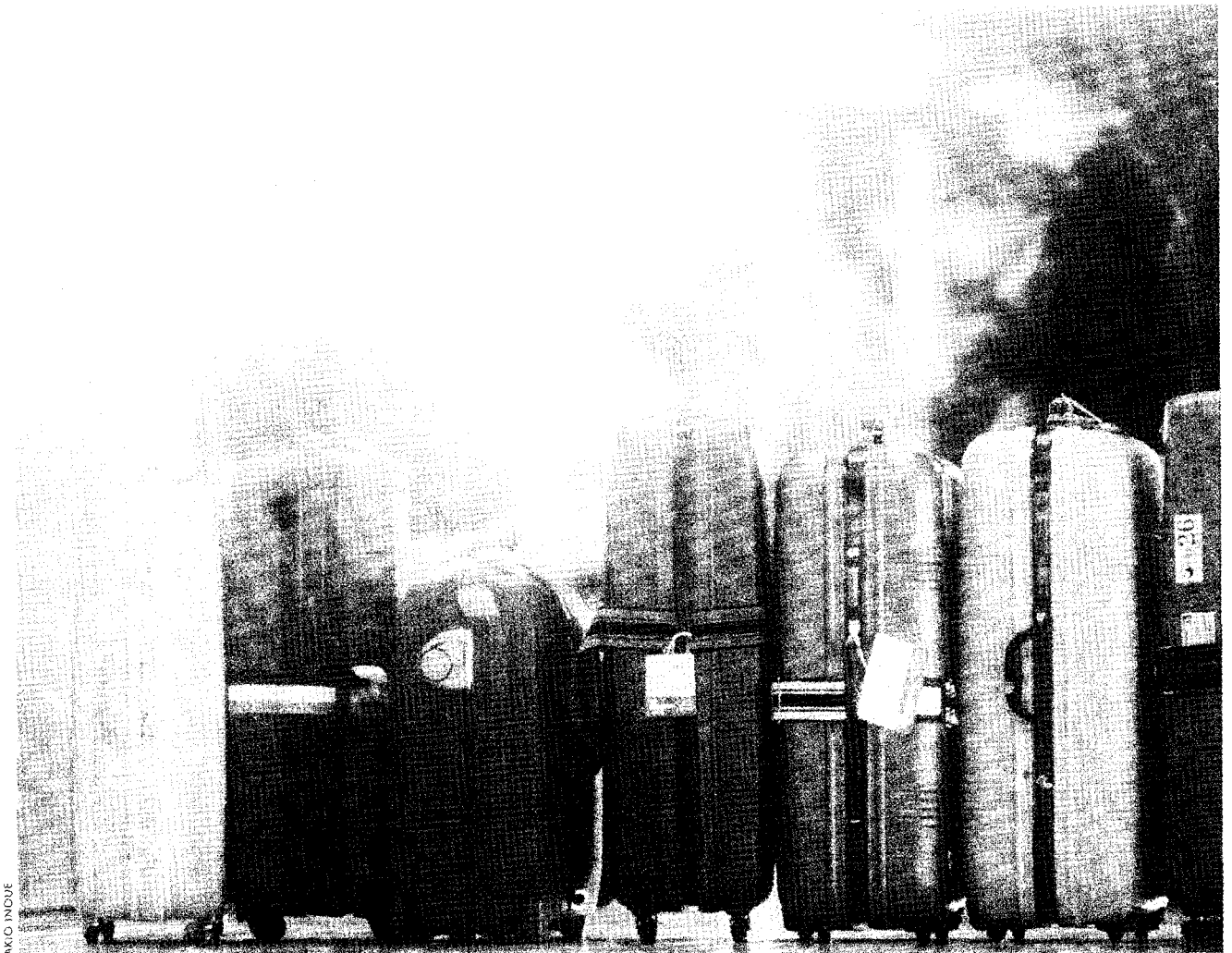
"Okay, I don't forgive him. Okay." The breeze in heaven is soft, sweet, smells delicately of oranges.

The poet wants to write good poetry, I know he does. He does not think of himself as a dull, careerist predator and sham. He could be a counterfeit and write great poetry at the same time, perhaps. He wants to know awe. He wants to have important things to say to his fellows, to make cold souls warm, to ease hurt, to praise love, to give hope to the despairing and companionship to the lonely, to hold the breath of wisdom in his hand for an instant, to add to what we have. He wants to *see*. Even a blind squirrel finds a ... No, never mind that.

"Jesus, this is hard. This is hard," I say, "Jesus."

His eyes are terrible. ▀

Steven Barthelme teaches at the University of Southern Mississippi. His fiction has appeared in McSweeney's, North American Review, and The Yale Review.



SPECIAL COLLECTIONS *The Land of Lost Luggage*

If an airline has ever lost your luggage, you know that even after your claim has been settled and the matter closed (at least as far as the airline is concerned), you can't help wondering, Where did my bag go? Cedar Rapids? Ulan Bator? Alpha Centauri?

Actually, chances are pretty good it went to Scottsboro, Alabama. Every year thousands and thousands of wayward suitcases end up in Scottsboro—specifically, at the Unclaimed Baggage Center. Once an airline has tried and failed to reunite suitcase and owner (a process that varies according to airline), it will compensate the owner and sell the suitcase—and all its contents—to the UBC, which buys suitcases by the truckload and hauls them to its 50,000-square-foot complex in Scottsboro. There the UBC staff sorts through the bags and puts their contents in a showroom (or some of them: others are given to charity, still others discarded), where they can be seen and bought by members of the public. But are people really interested in buying other people's, uh, lost stuff? "We'll have close to a million people come to the store this year," says Bryan Owens, the owner of the UBC,

"from every state in America and thirty foreign countries. This is kind of the Mecca for lost bags."

Owens's father started the UBC in 1970, with a rented old house, a borrowed old truck, and a \$300 loan. Today the center gets nearly 7,000 new items every day, and Owens says that people can't seem to get enough. "It's a treasure hunt," he says. "Every day is like Christmas here—we never know what we're going to find. Just last week we found a twenty-eight-thousand-dollar tennis bracelet and a one-point-six-karat diamond ring. We've had a medicine-man stick adorned with a shrunken head, and a Nikon camera that was in the Space Shuttle. Back in the eighties we got a well-traveled Gucci suitcase that was packed with artifacts that dated back to 1500 B.C. And once we found a guidance system for an F-16 fighter jet, in a shockproof case from the Department of the U.S. Navy. It was labeled 'Handle With Extreme Caution—I Am Worth My Weight in Gold.'" The UBC sent that one back. —RICHARD RUBIN

Richard Rubin's book Confederacy of Silence: A True Tale of the New Old South will be published in July.

PURSUIITS & RETREATS

TRAVEL

TRIESTE ELEGIES

Enigma and nostalgia on the edge of Italy, at the heart of Europe

BY JOHN DONATICH

.....

The mind of the traveler has much to work with in Trieste. The place has hilly vantage points, beautiful balmy summers, earthy and sensual food, the largest yachting festival in Europe (the Barcolana), and a strange, unresolved history. The city sits on a strip of land called the Karst that is now in the far northeast of Italy, on the Slovenian border, but that has over time been host to the Illyrians, the Romans, the Byzantines, the Goths, the Venetian Empire, Napoleon's Empire, Austria-Hungary, Italy, Germany, Yugoslavia, and Italy again, since 1954. The city proves that globalization is anything but a new phenomenon; the region speaks of ambivalence and political revisionism. It bridges cultures to mark, as the Triestine author Claudio Magris once put it, "the passage from the airy marine ethos of Venice to a continental and problematic *Mitteleuropa*, grand, morose laboratory of civilization's discontents."

Trieste's moody winters fill the city with its signature wind, which whips down from the mountains in the northeast to the Adriatic at up to sixty miles an hour. Like the Provençal mistral and the New England nor'easter, this wind bears its own name and legend: *la bora* is said to periodically cleanse the city of its sins with three-day episodes. The wind seems overly expressive to the understated Triestini, who deem a man who's unnecessarily blustery, all full of himself, *l'uomo borioso*.

When I arrived in Trieste, however, on a Saturday last fall, the air was still and the sea was silver calm. A port city, Trieste has always lived and died by

its water. For Italy, nearly all of whose outline could be regarded as one vast harbor, the city might seem redundant. But for the largely landlocked Austro-Hungarian Empire, to which the city belonged from 1382 to 1918 except during some Napoleonic episodes, Trieste was the main port, a miniature Vienna by the sea, toward which the whole of Northern Europe seemed to lean.

Even today the city is dominated by the Hapsburgs' ambitions for it. Its architecture celebrates nineteenth-century neoclassicism; its medieval plan was opened up in favor of grand boulevards laid out in a fiercely logical grid. Despite the romantic ruins of a Roman amphitheater, and the medieval Romanesque Cathedral of San Giusto, the true icons of the city are republican, commercial, utilitarian, and bourgeois.

On that Saturday the market in Piazza Ponterosso bustled, albeit with a curious datedness. Two teenaged boys scraped together change to buy a reproduction poster for a 1968 Doors, Steppenwolf, and Chambers Brothers concert at the Hollywood Bowl. Two gentlemen in tweed coats and ties bought handheld fishing lines. Old ladies bought various salamis, and socks to wear with their sensible shoes. They walked with their adult sons, who lingered behind, giving rides to their own children on their shoulders.

Nearby, the bursary Tergesteo exhibited vintage photographs of Italian markets throughout the past century, in sepia sentimentality. Although the fashions have changed, many of the goods have not. This display was the

perfect introduction to Trieste—a celebration of the middle class; a nod to consumerism, that ancient form of entertainment; a stylization of what we do to survive.

In the Piazza dell'Unità d'Italia, Trieste's centerpiece and one of the largest open squares in Italy, dozens of couples walked arm in arm, stopping almost dead center to embrace and kiss. No one appeared to be alone. Dogs were being paraded proudly: pedigreed and manicured Borzois, Afghans, standard poodles, pugs, whippets—trophy dogs sniffing at each other with the compromised disdain of the kept.

Less clear was the status of the cats; these creatures of the back streets and the shaded public garden had a feral quality to them. Plates of fresh pasta and fish heads were left for them on stoops, like animist temple offerings. No sooner was a Vespa parked than a cat was sure to curl up atop its warm seat. These unskittish cats are so sure of the Triestini's affection that some actually need to be lifted off a bike by its owner.

Notwithstanding the cats, chickens rule the public garden: thuggish cocks and hens strut and peck, acting more like the Italian-gangster cliché than any of the citizenry. One pigeon that dared to step into a cock's way was pecked almost to death before it was saved by a woman who sat on a bench stroking and cooing at the stunned bird and then walked away with it. I was unsure whether she meant to nurse it or to cook it for dinner.

I was on a Sunday-morning walk when it began to rain. I dipped into a church, the Beata Vergine del Soccorso, and stood in the back with husbands who didn't take communion and waved good-bye to their wives as they headed to the altar. Curiously half-hearted, episodically Baroque, with sudden flour-



DANIELE DAINELLI/CONTRASTO/MATRIX

ishes of exuberance, the church seemed tired of itself, unsure of what was in store for it. Yet the communion line was long, and the service felt relevant. During the salutation the man beside me gave me his hand to shake, startling me with its rough grain and absence of a middle finger.

In Trieste there is just too much diversity—but of a subtle nature, as if calculated to add up to some average of all European culture—for you to entertain observations about quaint differences from your own life. There I was surrounded by people who sort of look like me or my mostly Slavic relatives, with broad faces, beaked noses, unexpected coloring. Unlike their dogs, the people are mutts, amalgamating the genetic legacies of the ethnic groups that have settled here. Body types seem to be decisive: big and beefy or light and waiflike. There's none of that American self-consciousness about being either too big or too little; these people seem to have adapted well to the culinary imperialism that defines their diet.

A new friend, Luciano, took me to Loggia della Maga, a restaurant “not

meant for tourists” (which is putting too fine a point on things). There we dined on a carpaccio of swordfish, and fresh fettuccine with shrimp and preserved lemons. Also on the city's menus I found gnocchi in plum sauce, a goulash, and stewed tripe. Here even the food has symbolic weight. Many regions in Italy insist on the differences and integrity of local cuisine, scoffing at tourist restaurants that will serve a dish as anomalous as “spaghetti bolognese,” mixing tropes of north and south with appalling familiarity. But Trieste cooks as it lives—in a simmering melting pot. The restaurateur and media-star foodie Lidia Bastianich spent part of her girlhood here and remembers the city's international but not quite cosmopolitan flavor fondly. She told me recently, “The best fish are always caught where salt and fresh water meet.”

At Trattoria ai Fiori, I ate sardines three ways: simple white filets in olive oil; *sardello saor*, the small fish floured, sautéed, and marinated with caramelized onions made sweet and sour by raisins and vinegar; and, finally, in a cream like a mousse, with fennel. My

main course was a plate of fresh tagliolini with tiny clams in an egg-based sauce perfumed by a split hot pepper that sat decorously in the center. Then came baby lettuces, soft like silk in the mouth, dressed with olive oil and a powerful homemade vinegar, and served with a chunk of goat's-milk cheese—all downed with a delicious and cheap Tocai Friulano.

That Trieste is an anachronism is brought home (literally) by the nature of its museums, which were private houses and are now open to the public. The Revoltella is a neo-Renaissance palace, built between 1854 and 1858, that displays a wealthy entrepreneurial owner's taste in furnishings and art. When I visited, the place was empty, and a docent followed me around like an anxious salesperson. In his day Baron Pasquale Revoltella, a shipping magnate, used a camera obscura in his study, upstairs, to keep an eye on people strolling in the square below, and a telescope to keep tabs on Trieste's other leading citizen, who lived across the bay.



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The archduke Maximilian of Hapsburg was downsized, as it were, by the imperial powers in Vienna and sent off to Trieste, where his castle, Miramare, was completed in 1860. Three years later he was made redundant again and sent off to be crowned Emperor of Mexico, in which country he was promptly executed by republican insurgents led by Benito Juarez. His wife, Charlotte of Saxe-Coburg-Gotha, obligingly went mad and was sent back to her native Belgium. Their tragic history sets the tone of Miramare, a nervously ornamented replica of a medieval castle built on a seaside promontory. Formal gardens organize the outdoor space, and throughout the park's fifty-four acres are plant and tree species collected from every corner of the world—an anxious hoarding by a dying empire. As I wandered from room to room, I read a tale of insecure power in the castle's interior-design survey of history: the medieval stone walls, the heavy Baroque and neo-Renaissance furniture. This is Second Empire bombast, persuading itself of its legitimacy, dismissing the elegant restraint of Biedermeier.

Upstairs, in rooms appropriated by the Duke Amedeo d'Aosta in the 1930s, the apartments are furnished in Italian Rationalism, with its ironic curves and perspective-giving angles. The effect upon entering is like that of following a goblet of hot mead with a martini. Even the statues of Maximilian (elegantly condescending to the Mexicans he would fail to rule) and the Duke (looking for all the world like *Batman's* The Penguin) appear to be at least five centuries apart in aesthetics, though they are only seven decades apart in history—a potent illustration of how history has accelerated the fates of the powerful in the past hundred years.

The Museo Morpurgo, the last of the museums I visited, was once the home of a rich Jewish merchant. Jews did well in the reasonably tolerant mercantile city until Italy surrendered to the Allies in World War II, and the Nazis swooped down on Trieste and the Croatian territories, deporting their Jews. Today only 600 or so members of a once thriving Jewish community remain. The museum had a morbid

quiet; it seemed unused to visitors. Floorboards creaked, and shutters were drawn. As I walked through the rooms, they were illuminated one at a time by an impatient docent, who lingered in the doorways sighing and clicking her keys at me. I took my time nevertheless, and scanned the leather spines in the library, which seemed to me identical to the libraries at Miramare and Revoltella: Aristotle, Ovid, Cicero, Shakespeare (in German), Montaigne, Voltaire, Goethe, Schiller, reading like obligatory stops on a Grand Tour.

Like so much else in Trieste, the language now spoken there is mixed, ambivalent. Signs on the city's outskirts appear in both Italian and Slovene. A couple walking their bulldog on a big stone pier spoke Italian to each other but used Hrvatski, the language of Croatia, for the dog. My stumbling Italian did well, because the Triestini speak a more elementary version, and speak more slowly, than do most of their countrymen. James Joyce, who lived in Trieste for many years, dearly loved the local dialect, Triestino. Luciano told me that the Triestini speak so slowly because they are used to people's translating in their heads—from dialect, from German, from Slovene and Hrvatski—before speaking, negotiating pauses, reconsiderations, diplomacy, the fear of being misunderstood.

All the same, Trieste has a strong, proud tradition of literary life. The poet Rainer Maria Rilke spent an exquisite and celebrated period of creativity at Duino Castle, as the guest of the Princess Marie von Thurn und Taxis-Hohenlohe. Her very name perhaps illustrates just how much the world has changed, and why something like *The Duino Elegies* is unlikely ever to be written again.

When I tried to visit the castle, it was closed to tourists. In fact, the house was on the market (though that's no longer the case). The family has sold its antiques and furnishings through recent Sotheby's auctions. But, I told myself, Duino is almost better this way—visible only from a footpath along the white cliffs, "towering against the sea, like foothills of human existence," as Rilke put it.

Probably the best James Joyce pilgrimage site is the Caffè San Marco, where bookshelves are lined with the works of the joint's onetime regulars, including Joyce, Magris, Italo Svevo, and Umberto Saba. Joyce lived in the city in "voluntary exile" (the poetic kind) for much of the twentieth century's first three decades, writing most of the stories in *Dubliners*, all of *A Portrait of the Artist as a Young Man*, and major sections of *Ulysses* here. Joyce loved Trieste and its contradictions, its sensuality and its indeterminism; it is a city he well imagined, his sense of exile blurry with myopia, the city itself stereoscoped through his spectacles.

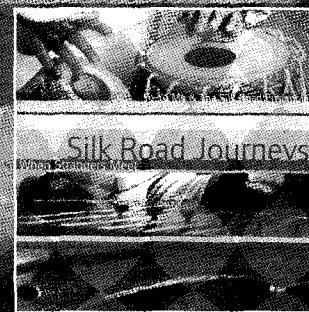
The travel writer Jan Morris claims that her recent memoir of living in the city, *Trieste and the Meaning of Nowhere*, will be her last book. As James Morris she was stationed in Trieste after World War II, during the Allied occupation, and her portrait of the city necessarily yearns after some lost state of mind. Morris charts Trieste as a cartography of melancholy, "an allegory of limbo." If Trieste is "nowhere," might a traveler come here to be lost, to experience abandonment, to play at being an exile? Trieste particularly appeals to travelers in search of the romance of exile, who look at the new world order with an ache for the old one, who seek out the scars of a homeland in a place that has never been sure to whom it belonged.

One of the great pleasures of travel is imagining living elsewhere, and Trieste obliges one with its ease, its mediocrity, its impurity, its crisis of identity and identity of crisis, with its contingencies, its nostalgia—but nostalgia for what? I sat for a few last hours speculating at Caffè degli Specchi, sipping a warming cognac against the breezes in the Piazza dell'Unità. The square, big enough that you can forget your thoughts or gather them in the time it takes to cross it, seems to lose visual depth, as an oozy fog breaks through any sense of dimension. The water laps lazily against the banks. Into it old Europe drains itself. ■

John Donatch is the publisher of Basic Books. He has written for Harper's, The Nation, and The Village Voice.

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BY MARY KILLEN

.....

Giving up alcohol can be addictive. It starts in the most innocuous way. You merely want to lose some weight, or perhaps to gain some health, and you decide to stop drinking, just for a week or so. Before you know it, you are hooked on the regular rushes of well-being brought on by abstinence. You are seduced by your improved appearance, or you crave yet another full night's sleep, uninterrupted by the nonspecific anxiety that used to wake you at four in the morning. Above all, there is the novelty of having mental clarity by day. You cannot imagine life without it.

The only trouble is that you remember all too well how irritating you used to find it during your own drinking days when some killjoy said, "Not for me, thanks—I'm on mineral water."

Drinkers mind if one among them is not drinking. Like death, drink is a great leveler. Sobriety immediately introduces a hierarchy.

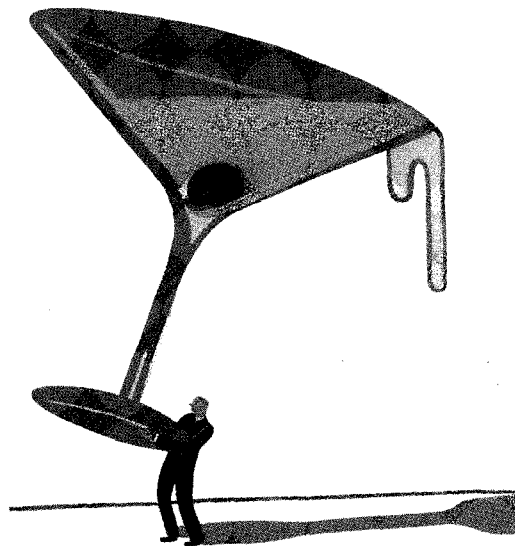
"What you need is an Attitude Adjuster!" a friend of mine was advised when he attended a horseracing event in Ireland. Never was a cocktail more accurately named. Downing one, whose ingredients included gin, vodka, triple sec, and amaretto, he found himself as exhilarated as all the others were by the bitter cold, the meaningless banter, and the longueurs between races.

So that your attitude may be adjusted to fall in line with theirs, sometimes other people all but require you to drink. But if you are determined not to, how can you maintain your social acceptability without coming across as smugly sober? How can you avoid being bullied into having "just one"?

As a host you can drink tomato juice while others are drinking bloody marys, or sparkling apple juice while

they have champagne. No one will notice if you merely sip from your glass, so that you don't have to get it refilled, which would give the game away. At the table take a glass of wine and just don't drink from it. Fortunately, other people are far more interested in themselves than they are in you, and so long as you raise your glass to your lips from time to time, they will not notice how little you are actually swallowing.

Then there is the business lunch, where consumption of alcohol may be an integral part of the bonding process. When Jonathan, a twenty-eight-year-old who worked in corporate intelligence, turned up for a lunch with some potential clients, they shouted a raucous greeting as he walked toward



the table; they were already pouring the champagne. How could he avoid making them feel conscious of a disparity in self-discipline?

Their faces fell momentarily as he refused the champagne. Then Jonathan said, "Listen, guys, I am so hung over from last night I think I might actually be having some sort of mini-stroke at this moment. I'm still seeing double. I don't dare have another drop." It was

fine then. Jonathan was an honorary drunk, even if not drunk at that moment, and the revelry went ahead without inhibition.

Of course, the nondrinker has his functions. He can drive everyone else home. He can hold on to the threads of conversations and steer people back toward their punch lines, or anticipate ugly scenes and defuse them.

A useful tip at this point: People who have had more than four glasses of wine will go straight to sleep if you can make them really comfortable. At a country-house party one summer I realized that the judgment of a certain Mrs. X had become distorted. She had been happily and faithfully married for ten years, but her husband had been unable to join the party and now she was heading for the bedroom of the only single man present—the culmination of three days of heavy flirtation. A compulsive flirt, she had done it *faute de mieux*. He was not even attractive.

"Camilla," I said, blocking her passage, "can we go to your bedroom for a moment? I've got something to tell you that you're going to find so interesting, and you're going to be so flattered and excited. But I can't risk anyone else overhearing."

Distracted from her mission, Camilla staggered into her room. "Just lie on the bed and I'll go and get two glasses of wine," I said. "I'll be back in a moment."

"Hurry up!" she yelled. "Don't keep me in suspense."

A further tip: Should it ever be the case that an alcohol-filled guest, given a few minutes in a fully recumbent position, particularly on her own bed, does not find sleep stealing peacefully over her long before the smugly sober one returns with the promised wine, she can soon be rendered comatose by a long and boring monologue narrated in hypnotic tones.

So all was well that ended well. Later Camilla was so grateful to me that she sent me a bottle of champagne, together with an effusive note. By now I've lost the note, but I still have the champagne. ■

Mary Killen writes the "Your Problem Solved" column for *The Spectator*, in London, and the "Back-seat Driver" column for the British edition of *House & Garden*.

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THE WIFFLE EFFECT

Wiffle ball goes big time—well, not so big

BY LEE GREEN

.....

If the phrase “organized adult Wiffle ball” has a slightly ludicrous ring to it, that’s because we invariably associate the white plastic sphere with childhood, backyard fields, and quirky ground rules. A one-hopper off the tool shed was a double, a shot over the boxwood hedge was a home run, and a foul ball into the fenced province of the neighbors’ dog meant the game was over.

That version of the sport still exists, fostering, as one enthusiast’s Web site puts it, “the ruining of America’s backyards.” But in the mid-1990s isolated groups of adult players—usually in their twenties or thirties—discovered on the Internet that plenty of others out there shared their passion. Adult tournaments have been around for years, particularly in the Northeast, where the Wiffle tradition runs long and deep, but competitive adult Wiffle ball has now grown into a thriving subculture of self-described “touring pros,” structured competitions, cash prizes, and slick playing fields. Forget the boxwood hedges; these guys swing for low, Fenway-green outfield fences eighty to 110 feet from home plate. And forget those plastic Wiffle bats, too. “That little yellow bat just doesn’t cut it today, especially against the pitchers you’re facing,” says Mike Palinczar, the organizer of two annual tournaments in Trenton, New Jersey, and one of the game’s premier pitchers. “If you’re up there with a yellow bat, you might as well give up.” Today’s players wield sturdier plastic or aluminum bats (including one manufactured by Palinczar) with names like Ledge Sledge, King Stick, and Wiffle Pro. A carbon-graphite model, the Moonshot, sells for \$120.

The sport reached a milestone in January of 2001, when six players from various parts of the country, frustrated by bitter rivalries and a lack of organization, convened in Baltimore to see if they could invest the game with some semblance of order and uniformity. Two days later they emerged as the United States

Perforated Plastic Baseball Association, a governing body that publishes rules, sanctions a series of tournaments on both coasts during baseball season, and conducts post-season playoffs that culminate in a fall national championship. The organization’s name may suggest a lack of seriousness, but the players, most of whom played baseball in high school or college, intend nothing of the sort. Billy Owens, of Costa Mesa, California, a thirty-four-year-old electronics distribution manager, is one of the association’s founders and the editor of an online Wiffle-ball newsletter called *Fast Plastic*. Owens bristles at the notion that he is consumed by a child’s game. “For ex-baseball players,” he told me, “this is the closest thing they can get to playing college-level baseball or even semi-pro.”



To be sure, USPPBA Wiffle ball, for all its similarities to baseball, is a significantly different game. Teams field just three players (though five may rotate in the batting order). Games go six innings instead of nine, and take about one hour instead of three. And baserunning is not a component. As with the backyard game, hits are awarded according to precise ground rules: one base for a ball that lands safely in the outfield, two bases if it rolls to the fence, and three if it hits

the fence on the fly. A home run, naturally, occurs when a ball clears the fence. In a sense this is poor man’s baseball, but it is played with a devotion bordering on obsession. Owens, a family man famed in Wiffle circles for his pitching prowess, crossed the country thirty-five times over three seasons to compete against the best talent in the Northeast. “I’ve spent thousands and thousands on airline tickets and other expenses,” he says. Owens’s former teammate Mark DeMasi, a thirty-six-year-old married father of two who lives in Atlanta, flew to California seven times in six months last season to compete in the USPPBA’s West Coast series of one-day tournaments.

“Almost every other weekend I’m gone,” Mike Palinczar says. Such dedication can discourage girlfriends: “I had one for seven years, and Wiffle ball actually drove her crazy.”

For a grown man to reveal that he spends his weekends playing cutthroat Wiffle ball can’t be easy. “I tell people at work and they’re baffled,” admits Bruce Chrystie, from Rehoboth, Massachusetts, a thirty-eight-year-old pricing specialist for Metropolitan Life who is the executive director of the USPPBA. “It’s like saying you collect Tonka trucks.” Chrystie plays for In the Box, a top team in the East.

When Tom LoCascio, a Long Island schoolteacher, met the woman he would later marry, he addressed the matter head on: “I play Wiffle ball,” he said. “Is that an issue for you?”

Chad Anderson, a twenty-four-year-old account executive for Sharp office equipment, never gave the image problem a thought. He is one of three brothers who, along with an uncle and a family friend, make up the A-Bros, a virtually unbeatable team from Ventura, California. After getting his first taste of tournament play, in 2000, Chad had team business cards printed identifying the A-Bros as the “#1 Wiffleball Team in the Nation.” The boast seemed brazen at the time, even though the A-Bros had won several competitions, but last season they clobbered everyone in sight, compiling a 47–0 record before the USPPBA national championships, in Granite City, Illinois, where they beat the hosting Lakeside Kings three games to none, without allowing a run.

Wiffle ball’s great advantage over

ERIC HANSON

baseball has always been that it requires so few players. Its great disadvantage—from a spectator's standpoint, anyway—is that the ball itself skews the enterprise decidedly in favor of the pitcher. Those who have learned how to fully exploit the ball's aerodynamic idiosyncrasies can throw pitches that dart about like hummingbirds.

Billy Owens once carried a no-hitter into the sixteenth inning in a tournament final before surrendering a home run and losing 1-0; the opposing pitcher had a no-hitter going too. In last season's eastern playoffs Ryan Hunsel, the Lakeside Kings' nineteen-year-old prodigy, threw back-to-back no-hitters. Chad Anderson tells of pitching Wiffle ball a few years ago against some triple-A baseball players and Cory Snyder, then a major-leaguer: "They couldn't touch me. Then I started telling them what was coming, and they still couldn't touch it."

Forty-nine years ago an out-of-work Connecticut man named David Nelson Mullany cut holes in a hard plastic orb of Cory perfume packaging with the intention of creating a marketable ball

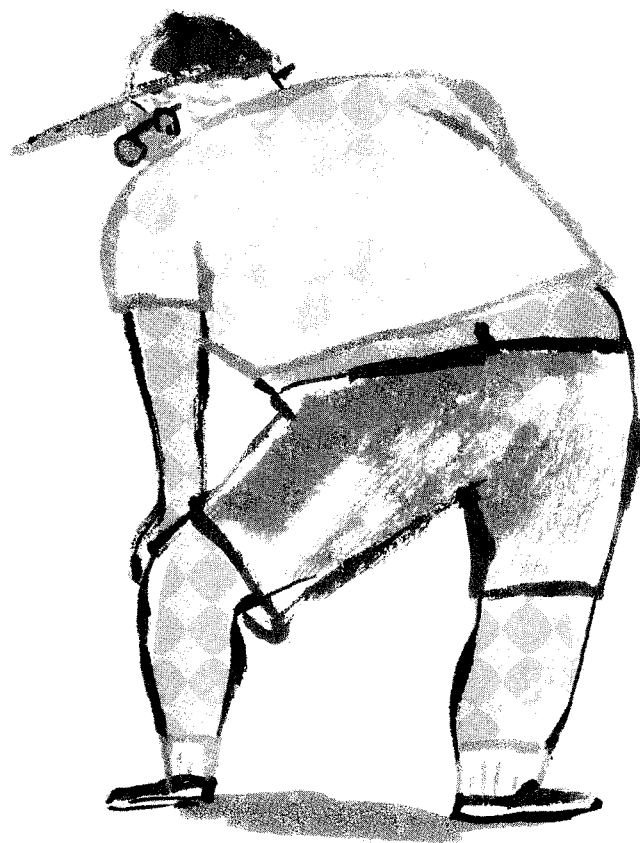
for kids that wouldn't break windows and would curve easily. Neither he nor his thirteen-year-old son, David, who helped him experiment with different designs, could have foreseen that their creation would become one of the most enduring toys in American history.

The office and modest factory of The Wiffle Ball, Inc. have long resided in a two-story brick-and-block building in Shelton, Connecticut, just east of New Haven. David A. Mullany is now sixty-one and the president of the family-owned company. When his father asked him what they should call the ball, he said "whiffle," for the slang word "whiff," meaning "strike out." The boy suggested they spell it without the *h*. "If we ever have to make a sign for over the door," he explained, "that's one less letter we'll have to pay for."

Mullany won't disclose exactly how many balls the company sells each year, leaving it at "a few million." The phenomenon of adult play? "I'm aware of it," he says without enthusiasm; the company has no plans to get involved. Everything about the Wiffle company, from its office to the box the ball comes in, looks frozen in the 1950s, and indeed Mullany seems

most comfortable talking about the past. He recalls that his father, who died in 1990, cut holes in just one half of the ball because he thought that the resulting weight imbalance would cause the ball to curve. "A lot of the hole shapes didn't work out," he says. "We couldn't get a ball that curved, regardless of how many holes we had or where we put them." Finally, after days of trial and error, they found a design that worked: a circle of eight evenly spaced oblong holes perpendicular to the center seam, all in one hemisphere.

Last July, fourteen Wiffle-ball teams from six states battled for bragging rights and \$800 in prize money in a Massachusetts tournament consisting entirely of players who weren't even alive when Mullany invented the ball. The contest eventually narrowed to two teams. In the Box, the one that ultimately prevailed, owed its survival in tough quarter- and semi-final games to the wiles of its pitcher, Bruce Chrystie, who befuddled the opposition for fifteen innings, allowing just one run. Like most successful Wiffle hurlers, Chrystie throws an assortment of junk:





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curve balls, sliders, changeups, screwballs, cut fastballs, drops, and a pitch impossible to achieve with a baseball—the riser. And like *all* successful Wiffle hurlers, he can't imagine taking the mound with a new, unblemished ball. In the forty-two feet between the pitching rubber and home plate a pristine ball might curve two or three feet. A properly scuffed ball can curve at least twice that far. It will also travel faster and more predictably.

Scuffing is illegal in baseball, but in Wiffle ball it's essential. "A Wiffle ball right out of the box is one of the most unpredictable things in life," Billy Owens says. "It's crazy." The manufacturer's literature indicates that the ball curves in the direction the holes are facing, and if you toss the ball thirty or forty miles per hour, that is indeed how it flies—at least, Chrystie says, "until you scuff the ball, and then it works completely the opposite." Now the ball curves *away* from the holes. But Wiffle pitchers release the ball with a "muzzle velocity" somewhere in the range of sixty to eighty miles per hour. At those speeds a pristine ball gets squirrely, whereas a scuffed ball keeps breaking away from the holes.

Many pitchers prefer balls that are not merely scuffed but dented, softened, squashed, or otherwise disfigured. To produce such effects they use bats, sticks, hammers, gravel, bricks, asphalt, concrete, sandpaper, X-Acto knives, freezers, microwave ovens—almost anything goes. "You're not allowed to alter the molecular structure of the plastic," Chrystie says.

Just why a Wiffle ball behaves as it does in flight is left to conjecture; no one, apparently, has ever gone to the trouble and expense of scientifically researching the matter. The game's best pitchers can tell you *what* the ball will do, but not *why*. We do know that the elder Mullany erred in thinking that rendering one hemisphere lighter than the other would cause a ball to curve. Depending on the spin axis, says Robert G. Watts, a professor of engineering at Tulane University and a co-author of a 1991 book on baseball physics, either "nothing special happens" or the ball "will wobble but not curve."

A fundamental theorem of fluid dynamics, Bernoulli's principle, states that as the speed of a moving liquid or gas

(air, for instance) increases, its pressure decreases. Robert K. Adair, Sterling Professor Emeritus of Physics at Yale University, the author of *The Physics of Baseball* (1990) and a former physics consultant to the National League, speculates that a pristine Wiffle ball curves toward the holes in part because air moves over that side of the ball faster than it moves over the smooth side. "My guess is that the perforations disturb the air so that there are, effectively, bulges," Adair told me recently. "The air would have to go faster over that side of the ball to go around all the bumps," lowering the pressure on that side and causing the ball to move in that direction. Having posited this theory, Adair reviewed it in his mind and then laughed. "I don't really understand it," he said.

The Wiffle ball used in USPPBA competitions is essentially the same size as a baseball but only about one sixth the weight. The aerodynamics of baseballs are tricky enough, says the sports-physics expert Peter J. Brancazio, a professor emeritus of physics at Brooklyn College. "But a Wiffle ball is even worse, because you've got holes in it, it's hollow, it's light, and the air can do all sorts of crazy things to it. That's an extremely difficult thing to research." Speculation is cheap, however, and Brancazio's educated guess is that scuffing the ball essentially takes the holes out of the equation. When the smooth, unperforated side is sufficiently roughened, he argues, it may disturb the air more than the perforated side does, reversing the pressure asymmetry—Bernoulli again—and causing the ball to curve away from the holes.

Given all the other aerodynamic phenomena to consider, from the effect generated by the ball's spin to drag coefficients, boundary layers, shearing forces, and wake turbulence, perhaps David Mullany has the right idea. Half a century has passed since he and his father created the Wiffle ball, yet in all those years he has never attempted to learn why the ball does what it does. Nor has he any intention of doing so in the future. "If it works," he says, "what the hell does it matter?" ■

Lee Green is a former columnist and contributing editor for Outside magazine, and a recipient of the Lowell Thomas Award for travel writing. His work has appeared in Audubon, Esquire, Sports Illustrated, and the Los Angeles Times Magazine.

GEMS IN A JAR

*Fresh fruit, carefully preserved,
captures summer for your
kitchen shelves*

BY CORBY KUMMER

.....

Most San Franciscans interested in food find their way to the Saturday-morning Ferry Plaza Farmers' Market. That means the market is very crowded—so crowded that by 10:30 it can be impossible to move from the organic mizuna to the tasting trays of plumcots and Suncrest peaches. Most people arrive with maneuvering strategies. Mine is to go to the Downtown Bakery booth for a doughnut muffin, a pastry that combines the virtues of its named components, and then fight my way around the oval of the market to eat it with an indecent number of tasting spoonfuls of June Taylor's jams and fruit preserves.

I buy preserves wherever I travel, and at home I generally have several kinds open at a time, the levels lowering through the week like an ebbing tide. The Bay Area, with its natural abundance and appreciation of good food, has given rise to two great artisan jam-makers—Albert Katz, a native of Los Angeles who makes fruit preserves in Napa and sells them on the Web (katzandco.com), and Taylor, who lives in Oakland and sells her production in shops and at the Saturday market (her Web site is junetaylorjams.com). Both artisans guard their sources for wild berries and the best citrus and stone fruits. Both insist on making very small batches, to keep flavors pure and intense, and on using minimal assistance, so that they themselves can control the cooking. Both believe in adding only enough sugar and cooking only long enough to preserve the fruit and bring out its inherent qualities. Both are stubborn purists. For reasons I've never fully understood but have learned to respect, both are a little grumpy.

Taylor—a brisk, no-nonsense woman who is laconic until it comes to her jam-making philosophy—is very generous with samples, and her rectangular table



at the market is always covered with open jars and little plastic tasting spoons. The colors are gem tones, like the topaz of thick-cut orange marmalade and the garnet of elephant-heart-plum preserves. I usually taste most of the dozen or so marmalades and fourteen or so preserves before deciding that my favorites are, say, Santa Rosa plum and raspberry. I stock up then and there on the morning's best. Those preserves might never be that good again—the blessing and the curse of artisan-made food. (And over years of trying to order fruit preserves from Katz & Co., I have learned to assume that what I want is out of stock.)

Last summer I noticed that Taylor was making unusual and very beautiful whole-fruit preserves with slightly exotic flavorings. I wondered whether the inspiration had come from her native England and whether it would be difficult for me to make something nearly as pretty and good-tasting. The answer was yes to the heritage and no to the difficulty, I learned when I worked up the courage to invite myself to Taylor's production kitchen.

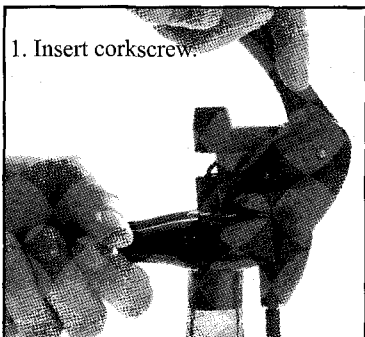
June Taylor wants to reinvigorate the hallowed British tradition of making marmalade and fruit conserves, she told me when I visited late one afternoon at the kitchen she rents in Emeryville, on the Berkeley line. It's a sunny, high-ceilinged place with long cutting boards and tempting ingredients such as chocolate and raisins on the shelves: Taylor shares the kitchen with professional bakers, and uses it in their off-hours. The big sliding door is usually open to the street, ready for someone to drop off a box of fruit.

Taylor finds her fruit in somewhat random ways. She explained, for example, that the jars of blueberry conserves she was filling were the last of 3,000 she had produced in two weeks, the result of an unexpected low price when a farmer lost his previous buyer. Leads often come her way at the Ferry Plaza market, which serves the function medieval markets did in being a place to exchange information as well as goods. A woman who grows several rare varieties of pears saves the fruit of her few trees for Taylor, and provided the

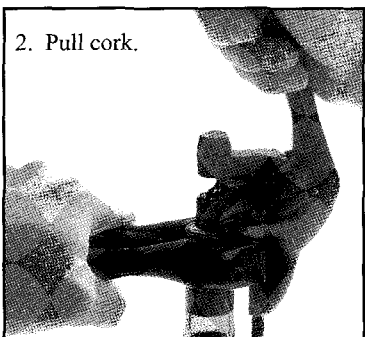
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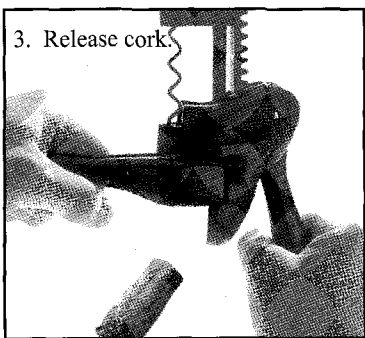
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Seckel pears that Taylor simmered in an unusual spiced syrup she had found in an English cookbook—it calls for lemon peel, bay leaves, cinnamon, allspice, and cloves, with a final spiking of cassis vinegar.

There was no homemade jam in the pantry of the house in a countrified London suburb where Taylor, whose accent reveals only traces of her birthplace, grew up in the 1960s. But even as a girl she had a strong love for making things by hand. She actually enjoyed home economics, and studied it for seven years before switching to sociology in order to work in social science and education. Weary of the academic life, Taylor traveled on a whim to California, where she met a photographer whom she married. To support herself she first tried baking bread, an activity much in vogue in the northern California of the mid-1980s, in local

eschewing anything not traditionally available in England. In old British cookbooks she found inventive and subtle recipes for conserves.

When she began her business, in 1990, Taylor decided to use only organic fruit. She cared about the health of her young son and her potential customers, and about the environment of her adopted country. Her standards also required fresh fruit—a condition that may sound obvious but is surprisingly uncommon among other jam and jelly artisans. They, like industrial producers, use frozen fruit, which allows a year-round production schedule. Frozen fruit supposedly tastes just as good as fresh when cooked into a jelly or a jam. But it can never give the flavor or, especially, the texture that fresh fruit can. Whether or not the fruit was frozen before being cooked need not appear on labels, and so it doesn't—even as a

The beauty of fresh fruit and the tactile pleasure of preparing it were part of June Taylor's reason for making jams her business. Another part was a desire to change American notions about British food.

restaurants. She began cooking marmalades and conserves while she was working as a baker in the celebrated Oakland restaurant Oliveto, and liked it so much that she decided to sell them on her own. The beauty of fresh fruit and the tactile pleasure of preparing it were part of her reason for making jams her business. Another part was a desire to change American notions about British food.

Jams, jellies, and marmalades remain a British heritage: even today the definitive guides to making them are English. Taylor was following the tradition of the English expatriate who searches out fruit and unlined copper pots to boil up a taste of home. Because her own mother had never made preserves, Taylor had few preconceptions; she used her instincts as a cook and her Bay Area-sharpened love of freshness to rethink jam-making. She looked for rare and highly perfumed varieties of the fruits her English forebears used,

farm's quaint name and organic fruit are trumpeted.

Taylor says that she finds "calming" the work of sorting through crates of fruit and then peeling, stoning, and slicing their contents and simmering them with sugar, lemon peel and juice, and seasonings such as sweet spices and fresh ginger. Working usually with just one assistant, she heats jars on wide aluminum trays in a convection oven (she prefers this method to the usual boiling) before filling them with jams or conserves and sealing them with rubber-ringed lids. Always, she says, she marvels at the beauty of the fruit.

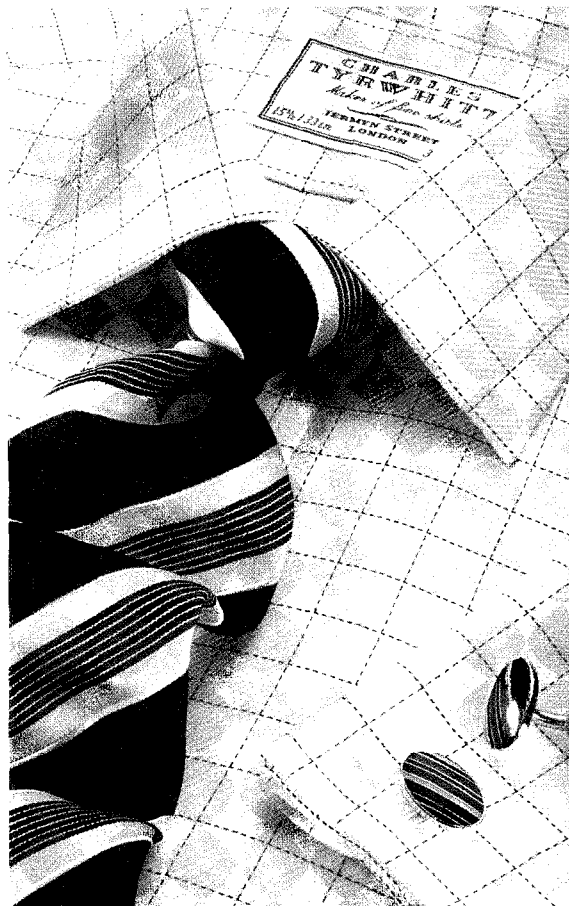
Constant checking is a luxury afforded by single-batch production. She can judge whether the cheesecloth-wrapped spices have steeped long enough. She can make the same mistake she too often does—waiting just a minute too long before removing poached fruit from syrup. Or she can scoop out the fruit just in time.

For her Seckel pears in spiced syrup she trimmed the stems so that the peeled pears would look pretty and even, and packed the pears by hand in beautiful rectangular jars from Italy. Such attention is economically inefficient, and Taylor, who relies on the income to help her family, knows this. She fears that keeping her business so small will not only be time-consuming but keep prices high and restrict her products to an informed elite. But if it grows, she will have to make compromises, and so far she has been unwilling to relinquish control, and with it some of the aesthetic pleasure she derives from her hand-work. "When people tell you how to do business," she said to me as she sealed an Italian jar, "they talk in terms of money and quantity." She clamped the lid tight. "They don't talk about beauty, taste, and love of craft."

Apricots are among the cruelest California fruits, because they look perfect and yet so often have no taste. But her conserves, which are made from cooked-down and concentrated fruit, have a far better texture and a fresher flavor than almost any commercial apricot conserves, which are typically made from frozen or dried fruit. And she has developed a way to show off the apricot's symmetrical good looks while subtly amplifying its generally deficient flavor. Apricots in almond syrup, the recipe she kindly showed me how to make, is a delicate yet authoritative way to capture a fleeting early-summer fruit—and much easier than jam.

Have ready five or six wide-mouth sixteen-ounce canning jars, washed and dried along with their lids and rubber sealing rings. Preheat the oven to 250° and put the jars into the oven to heat while you cook the syrup and fruit. Wash four pounds of firm, almost-ripe apricots (the only kind available in most supermarkets; try to find organic fruit), and halve and pit them. Set aside.

To make the syrup, combine in a large, heavy pot twelve cups of sugar and eight cups of water. Stir to start dissolving the sugar. Add half a cup of fresh lemon juice and the peel of two oranges (the shape and size of the peel strips don't matter, but try not to include



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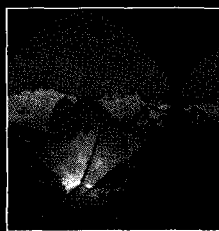
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any of the white pith). Bring the mixture to a boil over medium-high heat and boil for ten minutes. Remove the peel. Cut a round of parchment paper an inch wider than the pot's diameter, using the lid as a guide.

Put the apricots into the boiling syrup and cover them with the parchment paper, so that the fruit remains submerged. Reduce the heat to medium-low. Stir frequently, removing the paper each time, until the mixture comes back to a simmer. At that point the apricots should be tender when pierced with a sharp knife or a skewer but still hold their shape (be sure not to overcook them). Remove them from the heat.

Carefully remove one cup of the poaching syrup and stir in one and a quarter teaspoons of almond extract. (Adding almond extract to apricots is a pastry chef's trick to bring out their flavor; I prefer vanilla.) Use heatproof gloves or tongs to remove one jar from the oven. Working quickly and with one jar at a time, put about a tablespoon of the flavored syrup in the bottom of the hot jar and carefully pack the jar half full of apricots. Add more flavored syrup until it covers the apricots. Continue packing the jar with fruit until it is full, and cover with syrup to within an eighth of an inch of the rim. Screw the lid on tightly. Repeat for each jar, flavoring the syrup a cup at a time as needed. Leave the jars undisturbed until the lids become concave, indicating that a vacuum seal has been achieved—at least two hours.

This poaching and packing method can be adapted to other stone fruits as the season progresses; it is especially successful with peaches and plums. (If the stones cling, poach the fruit whole.) The syrup's flavorings can of course be varied, and here's where you can experiment. The filled jars are almost always very pretty, and careful packing will make them look professional. Search for interesting ingredients, preferably close to home. There's no telling what you might get from a friend or neighbor. 

Corby Kummer, a senior editor at The Atlantic, is the author of The Pleasures of Slow Food, to be published this fall.

CAL PEP*Restaurants worth building a trip around*

BY CORBY KUMMER

.....

Long before trend-conscious American restaurants installed open kitchens so that diners could feel they were in on the show, Barcelona had an open kitchen in every café. It would be easy to think, in fact, that Catalans invented the form of dinner theater in which cooks nimbly reach over and behind one another for ingredients and assemble dishes in a constant ballet. These are serious restaurants, laid out like luncheonettes. But the graceful acrobatics are far livelier, and in ambition and variety the dishes go well beyond hamburgers and grilled-cheese sandwiches. Real cooking takes place at these stoves.

Diners line up around the occupied stools, though they know that even the arrival of dessert does not necessarily signal an imminent vacancy: people linger. When places do come free, waiters somehow manage to move customers down the counter to make room for groups, everyone sliding plates and glasses in uncomplaining synchrony. By the time people get seats, they usually know what they want: a wait at close range may be frustrating, but newcomers will get a start-to-finish demonstration of practically the whole menu. And food comes fast.

Cal Pep, on the edge of the Barri Gòtic, the old town near the waterfront, is agreed by Barcelonans to be about the best show in town. It's a somewhat dressed-up version of the lunch counters at the Boqueria, the central food market a ten-minute walk away—a vibrant and picturesque concentration of food vendors and great casual restaurants. Foodies will tell you that some of the freshest and best meals to be had are there (Bar Pinotxo, for instance, is a favorite). Boqueria restaurants are open only for lunch, though, whereas Cal Pep is open for dinner as well, and has a few tables in a back room. (Reservations are limited to

groups of six or more, and must usually be made weeks in advance.) The twenty stools at the counter fill as soon as the doors open.

It's hard to imagine a more entertaining spectacle than the carefully controlled chaos at Cal Pep. Newcomers simply tell a waiter (several speak English)

how many plates to bring; the usual number is four. As at the Boqueria, the focus is on Mediterranean fish and seafood, which have pride of place at the market. Josep Manubens Figueres, the chef and owner ("Pep" is a com-

mon Catalan nickname for Josep), goes the Boqueria restaurants one better by employing scouts who visit the principal fish auctions along the nearby Costa Brava every morning and buy what they think looks best.

Much of the fish is seasonal, of course, but a few seafood dishes are fixtures at virtually any meal. Nearly every diner starts with deep-fried *llengüeta*, inch-long fish with a fried egg on top. Like *angulas*, the similarly tiny baby eels that are the caviar of Catalonia, *llengüeta* are prized more for their soft texture than for their flavor (unlike *angulas*, they are legal to catch all year and not startlingly expensive). Cal Pep is famous for its mastery of deep frying, and the activity near the fryer is constant—the light shaking of a swarm of tiny fish in a sieve with flour, the draining of the fry basket into a ridged blue-glass bowl, the sliding of a fried egg from a small cast-iron pan onto the fish, the breaking up of the egg with a fork just before the dish is served. Diners spread the still-soft yolk so that there's a bit of egg in every bite.

Manubens, a small, active man of fifty-two who supervises the action and is recognizable by his purple-rimmed reading glasses, told me when I visited him late one recent afternoon that he keeps ingredients to a minimum, to

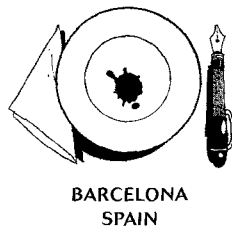
emphasize freshness. Shrimp are grilled over a sparse layer of coarse salt on the large griddle; *chipiróns*, small squid, and cuttlefish are grilled whole, with no salt or oil at all, and served with a sprinkling of finely chopped parsley. (No lemon, he said sternly—over grilled fish, perhaps, if customers want it, but never on other seafood.) The most elaborate seafood preparations are *tellerines*, tiny clams, sautéed in the shell with garlic, white wine, small red peppers, and little squares of ham; and langoustines (true scampi) sautéed whole with wine and strips of leek cooked until they are sweet and translucent.

Meat plays only a small role, with the exception of *botifarra de porc amb foie d'ànec fresc*, pork sausage with foie gras and port wine, served in inch-long slices over white beans. Another specialty is Manubens's version of tortillas, the potato-and-onion omelets that at every tapas bar are cooked in advance and served in wedges. His tortillas are cooked to order, with chunks of homemade chorizo, leek, and garlic in the batter, and an ample smearing of thick white aioli over the top. Vegetables are restricted to garbanzos sautéed with spinach and little cubes of blood sausage, and thin wedges of deep-fried artichoke in a transparent dusting of flour. These are both wonderful dishes.

Dessert is the chef's one concession to trends: Manubens learned from his friend Ferran Adria—a wildly original three-star Catalan chef who has made savory foams an alarming cliché among ambitious chefs—to put the makings of *crema catalana* in the kind of cartridge aerator used for seltzer. The foams at Cal Pep are sweet, and both the flan and a lemon mousse are sprayed into shot glasses, to be served side by side as dessert. Cal Pep also serves exceptionally good lemon and blackberry ice.

Meal-long friendships are integral to Barcelona dining, and chances are that you, too, will linger over dessert, chatting with those around you. You may not even feel guilty about the people waiting their turn. ■

Cal Pep, Plaça de les Olles, 8, Barcelona. 011-34-93-310-7961. Open 8:00 P.M. to 11:45 Monday, 1:30 to 4:00 and 8:00 to 11:45 Tuesday through Saturday; closed Sundays and all of August. Credit cards accepted.



BOOKS & CRITICS

BOOKS

A MAN OF PERMANENT CONTRADICTIONS

The paradox underlying all of Kipling's work is a horror of democracy combined with an exaltation of the common man

BY CHRISTOPHER HITCHENS

.....

In his generous and beautiful elegy for William Butler Yeats, W. H. Auden affirmed, "Time that is intolerant," nonetheless "Worships language and forgives / Everyone by whom it lives." Putting this poetic faith to what he evidently regarded as a strenuous test, he asserted,

Time that with this strange excuse
Pardoned Kipling and his views,
And will pardon Paul Claudel,
Pardons him for writing well.

But the relation between time and tolerance turns out to be more uneasy than that. When he was alive many critics thought Kipling to be a bad writer, and also a bullying and jingoistic one, and many readers today agree. Moreover, much of Kipling's work, inarguably, was hasty and poorly written. Dick Helder, in *The Light That Failed* (1890), says, "Four-fifths of everybody's work must be bad," and one feels Kipling speaking more truly than he knew when his character adds, "But the remnant is worth the trouble for its own sake." A great deal of his fiction is still a chore or an embarrassment (never mind the "politics"); and he overproduced verse in a quite promiscuous manner, often for the most short-term and propagandistic motives. The shock effect of some of Kipling's compositions has actually faded; they now afflict the reader more with a sense of faint amusement than with horror or disapproval. There is the beery sentimentality; the gruff, husky, and rather painful male bonding; the agonizing affectation of demotic or plebeian speech; the

writhe-making racial condescension. But there is also this:

What is a woman that you forsake her,
And the hearth-fire and the
home-acre,
To go with the old grey
Widow-maker?

I paid a call on Jorge Luis Borges in Buenos Aires in late 1977, and fell into a trap from which I had no desire to escape. He was blind and lonely, and said he liked my voice, and asked me if I would stay and read to him for a while. He knew exactly where on the shelf to find the Kipling, and on what page I would find "Harp Song of the Dane Women."

She has no house to lay a guest in—
But one chill bed for all to rest in,
That the pale suns and the stray
bergs nest in.

"Long sips, please—more slowly," the old man beseeched as I reached the lines

Yet, when the signs of summer
thicken,
And the ice breaks, and the
birch-buds quicken,
Yearly you turn from our side,
and sicken—
Sicken again for the shouts and
the slaughters,—

You steal away to the lapping waters,
And look at your ship in her winter
quarters.

I had never read the poem with such attention before. And, though I knew it expressed something profound and eternal about men and women and warfare, I had not noticed until then that it is made up of Old English words. It was a leathery old aficionado of Anglo-Saxon, sitting in a darkened room many

leagues below the Equator, who lovingly drew this to my attention.

Twenty-two years later in Hong Kong, as I witnessed the closing moments of the British Empire, a Royal Guards band struck up the perfect hymn: "The Day Thou Gavest, Lord, Is Ended." Those who do not know this modest yet stirring feature of the Anglican or Episcopalian evensong may also not know the words or the music to "Eternal Father, Strong to Save," sometimes titled "For Those in Peril on the Sea." But if by chance you do know the latter anthem, you can hum the opening staves of Rudyard Kipling's "Recessional."

God of our fathers, known of old,
Lord of our far-flung battle-line,
Beneath whose awful Hand we hold
Dominion over palm and pine—
Lord God of Hosts, be with us yet,
Lest we forget—lest we forget!

When he was living among the whores and shore-leave drunks on the Thames Embankment, by Charing Cross (and writing *The Light That Failed*), Kipling used to go to music halls and pick up the melodies of the masses. When he was keeping company with regiments overseas, he would attend church parade, and attend to the hymnal. During the Boer War he was made to feel slightly uneasy when Sir Arthur Sullivan (partner of Sir William Gilbert) set one of his patriotic doggerels to music. But his entire success as a bard derived from the ability to shift between Low and High Church, so to speak. He was a hit with the troops and the gallery because of the very vulgarity that Max Beerbohm despised, Oscar Wilde rather envied, and Henry James could only admire. But he was also, because of his capacity for sonority and high-mindedness, the chosen poet of the royal family and the *Times*. (In my opinion, he declined the laureateship so that he could keep one foot in each camp.)



There is something about twilight that appeals to the English, and that expresses itself in the *Beating of the Retreat*, the singing of "Abide With Me," the bugles calling the Last Post, the shades lengthening over cloisters and cricket grounds, and the melancholy "drawing-down of blinds" so perfectly caught by Wilfred Owen. "Recessional"—the dying music of the even-song choir as it withdraws—has all this netted in one word. To those born or brought up in England after 1914, let alone 1945, the sense of a waning day is part of the assumed historical outcome. It was Kipling's achievement to have sounded this sad, admonishing note during the imperial midday, and to have conveyed the premonition among his hearers that dusk was nearer than they had thought. David Gilmour's title is therefore exceptionally well chosen, because be-

tween the first chill of realization and the eventual recognition there falls—or fell—a shadow.

Gilmour's admirable book is written slightly too much on the defensive. He maintains that Kipling was not, as the smug moderns believe, a racist or an imperialist or a sadist or an anti-Semite

or a repressed homosexual—and there is sound evidence, in his writing and in his life, to counter any such simplistic interpretations. But there is also much evidence, drawn from the same sources, to suggest that

**THE LONG
RECESSIONAL:
THE IMPERIAL LIFE OF
RUDYARD KIPLING**

by David Gilmour

Farrar, Straus & Giroux
352 pages, \$26.00

Kipling *was* all of the above. It is far preferable to approach this author, as Gilmour often does, as a man of permanent contradictions.

Kipling's most celebrated poem, which is also the proof of his durability as a poet who can above all else be recited, is "If—." The whole scheme is based on the reconciliation of opposites.

If you can dream—and not make
dreams your master;
If you can think—and not make
thoughts your aim;
If you can meet with Triumph
and Disaster
And treat those two impostors
just the same;

And (more significant for Kipling's own trajectory)

If you can talk with crowds and keep
your virtue,
Or walk with Kings—nor lose the
common touch ...

In Kipling's lifetime this became the favorite poem of José Antonio Primo de Rivera, the founder of Spanish fascism, and of President Woodrow Wilson. It was apparently written in honor of Leander Starr Jameson, a British colonial pirate who led an aggressive raid into Boer territory, precipitating the horrible South African war by acting as a "deniable" provocateur for Cecil Rhodes. Gilmour comments dryly that the lines in commendation of fortitude and stoicism sat

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ill with "the man who blundered impatiently into the Transvaal, surrendered rather quickly when surrounded by armed Boers, and was led weeping into captivity." But perhaps those very lines, which illustrate T. S. Eliot's gallant distinction between "verse" and "poetry" (with Kipling just on the right side of the demarcation), were inscribed with these shortcomings in mind.

Kipling's most successful and polished achievement in prose, *Kim* (1901), is also dependent on the idea of a double life. The boy is an orphan, raised to believe he is half-caste, and is "passing" for Indian. (His father was an Irish soldier and his mother, we learn, a white camp follower.) The whole action of the story hangs on dissimulation and duality. Some friends of mine once employed the epigraph to Chapter Eight as an epigraph to a study of Kim Philby, the most accomplished double agent of all time.

Something I owe to the soil that
grew—
More to the life that fed—
But most to Allah Who gave me two
Separate sides to my head.

This is drawn from a Kipling poem titled "The Two-Sided Man." As if to underline its message, Kipling added,

I would go without shirts or shoes,
Friends, tobacco or bread
Sooner than for an instant lose
Either side of my head.

If one were to assemble a balance sheet of Kipling's own explicit contradictions, it would necessarily include his close relationship with the Bible and the hymnal, and his caustic anti-clericalism; his staunch Anglo nationalism, and his feeling that England itself was petty and parochial; his dislike of nonwhite peoples, and his belief that they were more honest and courageous; his love-hate relationship with the Irish; his contempt, and deep admiration, for the United States; his respect for the working class, and his detestation of the labor movement; his exaltation of the empire, and his conviction that its works were vain and transient.

A similar approach could be taken to the study of Kipling's psyche. From childhood he was both repelled and attracted by cruelty. He manifested an extreme fear and loathing of homosexu-

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ality—vulgarly regarded as telltale. (Gilmour flatly dismisses Martin Seymour-Smith's suggestion that Kipling was gay, but Angus Wilson was probably right in supposing him to have been in love with the young writer Wolcott Balestier, whose sudden and early death appeared to drive him to distraction. Those friends, including Henry James, who attended his bizarre, hasty wedding to Wolcott's mannish sister Caroline—where it might almost be said that the funeral baked meats for the brother did coldly furnish forth the marriage table—were somewhat at a loss to explain it any other way.) Ultimately, Kipling's two greatest literary and emotional attainments—the ability to evoke childhood and the capacity to ennoble imperialism—contradicted themselves too flatly and painfully, and culminated in the shattering sacrifice of his beloved son, John, on the Western Front in 1915. This was enough inner contradiction for several lifetimes.

One learns from Gilmour that Kipling's first Indian stories, *Plain Tales From the Hills* (1888), were considered subversive in their day. E. M. Forster's *Passage to India* still lay in the future, with its even more unsparing depictions of racial and sexual hypocrisy, but Lord Curzon, the viceroy and governor-general of India, felt obliged to soothe Queen Victoria by countering "the unfair and rather malevolent impressions that have gone abroad and have received some colour from the too cynical stories of Rudyard Kipling." It is important to note also that part of Kipling's animus against the Christian missionaries in India arose from his indignation at their destructive puritanism. Anglican clerics and pious generals forbade legalized prostitution for British soldiers, which led inevitably to a heroic rise in the incidence of venereal disease; Kipling later wrote that he wished he "might have six hundred priests—Bishops of the Establishment for choice—to handle for six months precisely as the soldiers of my youth were handled." Kim, it is fairly obvious from the opening passages of the story, has done some discreet pimping in Lahore in his time. The facts of life and the sexual motive are not hidden from our gaze as we follow him along the Grand Trunk Road (Forster regarded this as the best

writing any Englishman had done on India), where Kim and his lama later meet a Church of England clergyman who looks out "with the triple-ringed uninterest of the creed that lumps nine-tenths of the world under the title of 'heathen.'"

Kipling, it could be argued, did not like it when other people patronized Indians. But that did not inhibit him from patronizing them himself. His distaste for Hinduism in particular—like most British occupiers, he preferred Muslims—overstepped the bounds of his ostensible objection to forced marriage and became vitriolic. He drew many an unkind picture of the ways in which educated Indians tried to ape British customs. And, though he reserved to himself the right to praise Indians as equals ("Gunga Din" is the best-known example), he was always a ferocious and intemperate foe of any talk of self-government, let alone independence. To his inextinguishable shame, he even applauded General Dyer's massacre of unarmed demonstrators in the city of Amritsar in 1919, though one must remember that he had become unhinged by World War I. Gilmour is quite right to argue that the phrase "lesser breeds without the Law," in "Recessional," is not a racial reference but an allusion to the pagan arrogance of powers like Germany. He is equally correct in saying that there is no bow to apartheid in the lines about "East is East, and West is West, and never the twain shall meet"—lines that actually celebrate mutual respect. However, it is impossible to maintain that the essence of "The White Man's Burden" is not a belief in the concept of race-childhood, and therefore in the supposed corollary of racial tutelage, even if this stern condescension did mandate a self-sacrificing commitment and a responsibility on the part of the "white man."

A comparable ambivalence is to be found when we see Kipling writing about his countrymen. In one breath the British or the English are the descendants of Saxon and Dane and Norman, and the heirs to a new Rome. In another they are an effete breed given overmuch to mindless games ("the flannelled fools at the wicket or the muddled oafs at the goals") and too lazy to do much more than draw their dividends. In *Stalky & Co.*

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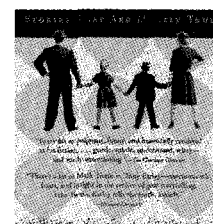
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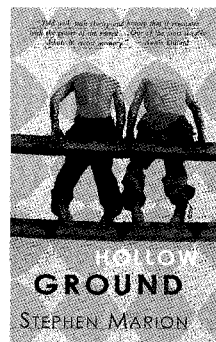
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(1899) the boys mock and jeer at a Tory politician—"an impeccable Conservative"—who comes to orate and to find recruits. The speaker presumes that many of them desire no more than the heady experience of "leading their men against the bullets of England's foes." The sour view of his youthful audience is that he is simply a "Jelly-bellied Flag-flapper." Yet Kipling himself was a fierce partisan of conscription, a frequent speaker at rallies for recruitment, a zealot for Baden-Powell's Boy Scout ethos, and a rabble-rouser for the most flag-flapping faction in British history, the Ulster Orange loyalists. It's a testimony to his art that he could put the opposite case with equal flair, but Gilmour is dead wrong in trying to acquit him of the charge of chauvinism.

Yet where Kipling excelled—and where he most deserves praise and respect—was in enjoining the British to avoid the very hubris that he had helped to inspire in them. His "Recessional" is only the best-known and most hauntingly written of many such second thoughts.

Far-called, our navies melt away;
 On dune and headland sinks the fire:
 Lo, all our pomp of yesterday
 Is one with Nineveh and Tyre!

There is also "The Lesson," a poem designed to rub in the experience of defeat in Africa, and (though it is abysmal as poetry) "Fuzzy-Wuzzy," a tribute to the fighting qualities of the Sudanese. "Arithmetic on the Frontier" is a memorable, sardonic warning against imperial overstretch in Afghanistan. Even in some of his verses from World War I—his most gung-ho and overwrought period—Kipling tried to hedge himself and his cause and to avoid overweening arrogance. Though he much esteemed his friend Cecil Rhodes, he was cautious about echoing Rhodes's grandiose fantasies of annexation and expansion. (In two short stories, though, he depicts a scheme to repopulate Kashmir with English and Eurasian settlers—a reverie that now makes one reflect.) It is also notable that he had a lifelong distrust of Winston Churchill, despite their many points of rhetorical and political agreement about India, Ireland, and Germany. Here again it may be that when listening to another alarmist patriot, Kipling had the grace

and integrity to suspect his own motives and effects as well as the other's. This capacity, as he might himself have put it, is not given to all men.

A book to study in tandem with Gilmour's would be George Dangerfield's small masterpiece *The Strange Death of Liberal England* (1935). In the first fourteen years of the twentieth century British politics was almost completely remade by the three forces of organized labor, Irish nationalism, and female suffrage. This triumvirate, representing a potential new majority as well as a new democratic ethos, was checked and thrown back by the cataclysmic and catastrophic outbreak of a continental war. (It still gives me a tremor to recall that although the vote on Irish Home Rule passed Parliament in 1914, it was not enacted, owing to World War I.) The figure of Rudyard Kipling could be taken as the emblematic reactionary of this period, and Dangerfield deployed him as such on at least one occasion. Though, by still another paradox, Kipling himself was partly the product of liberal England. He was related on his mother's side to the Pre-Raphaelite painter Edward Burne-Jones, and his aunt Georgiana Burne-Jones had rescued him from the appalling cruelty of the boardinghouse described in "Baa, Baa, Black Sheep," his fictionalized memoir of childhood misery and deprivation. Kipling's contempt for the aesthetes and socialists who had cared for him in extremity was sometimes expressed in an exaggerated distaste for the William Morris types and the "arty" in general. But he also loathed and despised the coal miners and railwaymen who were, as he saw it, undermining orderly society. This banal prejudice did not "hurt him into poetry," as Auden memorably said that Ireland had done for Yeats. But the Irish question stirred Kipling to produce some of the worst political verse ever written. It also moved him to support a shameful Tory mutiny against parliamentary rule. His speeches and poems from this period are hysterical in their anti-Catholicism and their invocation of blood and conspiracy. This is from "Ulster," published in April of 1912, as the Orange militias were arm-

ing and drilling to defy the vote that would have gone against them.

We know the wars prepared
On every peaceful home,
We know the hells declared
For such as serve not Rome—

This was a direct negation of the core of “Recessional”: if there was one colony where the British had every need to be modest about their conduct (and also every reason to be so), it was surely Ireland.

Yet when Kipling needed a romantic or daredevil or charmingly courageous character in fiction or ballad, he almost unfailingly selected an Irishman (or at any rate an Irish name). This stock-in-trade stuff—either the Hibernian broth of a boy or the shifty, priest-ridden thug—is to be condemned, if only as a cliché, or perhaps better say two clichés. The tension between the two became acute for Kipling himself when his only son was denied a commission in the army in 1914—he had inherited his father’s extremely poor eyesight—but managed with paternal string-pulling to find a risky place with the Irish Guards. After the boy’s death Kipling forced himself to write the official history of the regiment, as a form of atonement. He knew an irony, or a contradiction, when it bit hard enough.

Deeply hostile to the extension of the franchise, he composed one of his better efforts—“The Female of the Species”—as a sort of teasing satire. (Some say it was written as a reply to the female suffrage movement.) Like many quasi-misogynists, Kipling took refuge in the idea of woman as stern, pure, majestic, and decisive: “more deadly than the male.” It was this innate, lethal superiority, he insisted, that debarred women from the higher counsels of state, where detachment, reason, and compromise were required. So it’s somehow unsurprising that when war came, he was especially fond of citing rape victims in Belgium as the prime reason why English boys should flock to the colors and refuse all talk of peace.

The paradox underlying all of Kipling’s work, whether it be his letters, his poetry, or his stories, is a horror of democracy combined with an exaltation of the common man. He always ostensibly preferred the grunt or the ranker to the officer, the humble colonial servant to

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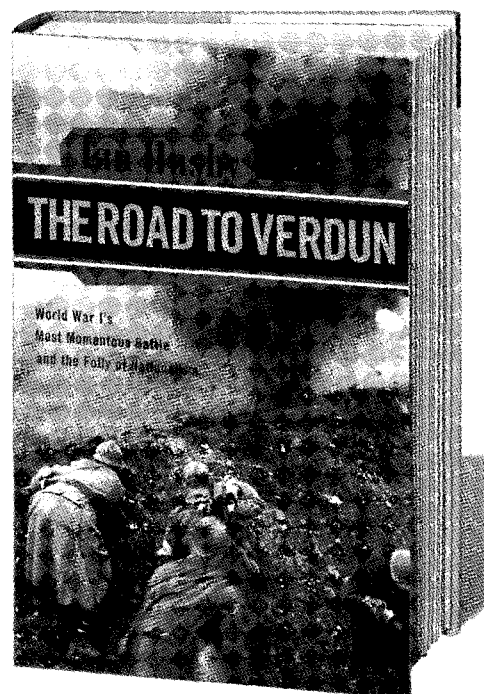
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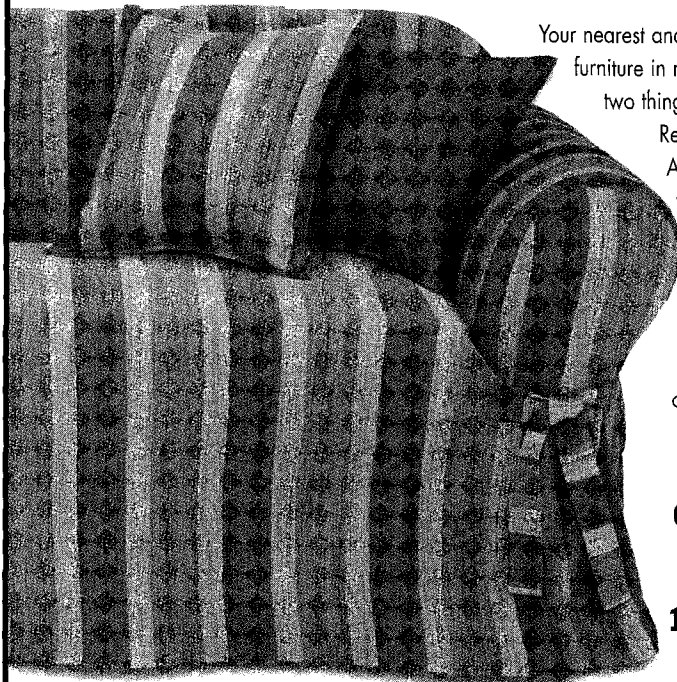
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the viceroy, the stoker and the sailor to the admiral. His songs about engineers and artificers—of which “McAndrew’s Hymn” is a sterling example—show, moreover, a real appreciation of modernity and innovation, and may explain why he attracted the attention of the Nobel committee when, as critics sniffed, Swinburne, Meredith, and Hardy were still alive, and a “blacksmith” should not have been preferred to a “goldsmith.” Probably no compliment could have delighted him more. Yet in his heart he disliked industrialism and the mass civilization that it brought in its smoky train.

This paradox extended to his odd encounter with America—alternately hailed as young, brash, and experimental, and excoriated as vulgar, cynical, and acquisitive. It can’t be said that Kipling was the first Englishman to register this contrast, or to fail to reconcile it, but his oscillations were unusually volatile. In different moods he could compose a poem accusing the rebels of 1776 of stabbing the motherland in the back and a paean to the magnificence of Teddy Roosevelt. He affected to adore Mark Twain, and then wrote a virtual manifesto for Twain’s least favorite cause, the Spanish-American War of 1898 (that was “The White Man’s Burden”: an eloquent plea for the colonization of the Philippines). Hoping, like Cecil Rhodes, for the reclamation of America as a part of Anglo-Saxondom, he helped to administer the famous scholarships. But in a later poem, “The Question,” he more or less accused the United States of betraying civilization by following Wilsonian principles.

Gilmour is obviously right to stress the “Roman” element in Kipling. He believed that the barbarians were always mustering on the frontier, and that order and good government could be maintained only by a stoic, disciplined, self-conscious, and self-sacrificing minority. This was both a saving solution for the outlying provinces of the empire and an insurance against sloth and corruption and decay at home. One of his most celebrated lines inquires, “What should they know of England who only England know?” Thus Kipling’s most agonizing paradox was his gnawing fear that the cost of empire would prove too great for the complacent and selfish Eng-

lish, and that they would throw away what they had won. (In a further fold of contradiction, he also disliked the bloodlust of both the London press and the stay-at-home patriots: a contempt amply, and equally, expressed in *The Light That Failed*.) He always represented the empire as a drain and a sacrifice. The idea that it could make a profit, or was an economic system at all, never really engaged his interest. What caught and held his attention was the figure of the lone white district officer, holding the line against flood and cholera and rescuing resentful "natives" who would never be grateful. One such civil servant, John Holden in "Without Benefit of Clergy," becomes involved with a Muslim woman and reflects, "The drawbacks of a double life are manifold." In one of the finer poems, "The Roman Centurion's Song," a recalled officer begs to be allowed to "stay on" as the legions withdraw, and help continue to civilize the British Empire.

Kipling was true to this stern ideal in his way. He knew that his beloved son was essentially unfit for military service, but he felt it would be indecent to hold him out of the ranks when other boys were going. But the long-awaited conflict with Germany, and young John's consequent death, nearly abolished his sense of balance and proportion, and therefore of fruitful contradiction. The notorious short story "Mary Postgate," in which a shriveled spinster experiences an orgasmic charge after deliberately refusing help to a wounded German airman, is entirely lacking in the chiaroscuro of the Indian tales; it shows us Kipling giving utter vent to the distraught, repressed, and sadistic side of his nature.

When I was a schoolboy in England, the old bound volumes of Kipling in the library had gilt swastikas embossed on their covers. The symbol's "hooks" were left-handed, as opposed to the right-handed ones of the Nazi *hakenkreuz*, but for a boy growing up after 1945 the shock of encountering the emblem at all was a memorable one. I later learned that in the mid-1930s Kipling had caused this "signature" to be removed from all his future editions. Having initially sympathized with some

of the early European fascist movements, he wanted to express his repudiation of Hitlerism (or "the Hun," as he would perhaps have preferred to say), and wanted no part in tainting the ancient Indian rune by association. In its origin it is a Hindu and Jainas symbol for light, and well worth rescuing.

To return to where I began: Kipling was not long gone when Auden wrote his farewell to Yeats, the closing staves of which begin, "Earth, receive an honored guest: William Yeats is laid to rest." In "The Charm" Kipling had written, "Take of English earth as much / As either hand may rightly clutch." This near repetition of meter was possibly a compliment of a kind, however subconscious. After closing Gilmour, I picked up *Kim* and re-read it in one session, marveling again at how fine it is. Bengali babus are mocked gently in what we might now call a "stereotypical" way, but the English are painted from the viewpoint of the conquered, and the joke is very often at their expense. The intimacies of racism are well understood: when Colonel Creighton tells Kim to beware of white boys "who despise the black men," Kim reflects that this hatred is most vile when expressed by half-castes. And then I came across this everyday police problem in the Great Game: "It was a wry-necked matter of unauthorised and incendiary correspondence between a person who claimed to be the ultimate authority in all matters of the Mohammedan religion throughout the world, and a younger member of a royal house who had been brought to book for kidnapping women within British territory."

It's all there: the image of the *jihad* megalomaniac combined with that of a spoiled and sulky princeling (plus Kipling's perhaps deliberate use of the disrespectful term "Mohammedan"). It gave me a vertiginous feeling to be reading this at a moment when British soldiers, self-consciously shouldering an Anglo-American burden, were back on the Afghan side of the forbidding Khyber Pass—this time neither as conscripts nor as conquerors. ■

Christopher Hitchens is a columnist for Vanity Fair and The Nation. He is the author of Unacknowledged Legislation: Writers in the Public Sphere (2000) and The Trial of Henry Kissinger (2001).

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PLAYING NICK CARRAWAY

A new biography of John F. Kennedy Jr. is less a book than a TV-movie script

BY THOMAS MALLON

.....

It's more than a little ironic that Henry Holt and Company, the publisher of *American Son: A Portrait of John F. Kennedy, Jr.*, has asked reviewers to sign a "confidentiality agreement" protecting Richard Blow, the author, from the premature disclosure of anything newsworthy, or at least interesting, in his book. By writing it, after all, Blow has decided to disregard the confidentiality agreement he signed while working at Kennedy's magazine, *George*. The book deal he made after Kennedy's death angered a number of his former colleagues. "They lashed out," Blow recalls at the end of *American Son*, "accus-

matter entirely from his ex-colleagues' mournful sound bites.

The author seems to have been struggling to keep his mouth shut from the day, in 1995, that he left the Washington mag-

azine *Regardie's* and joined *George* as a thirty-year-old senior editor. He tells us that Kennedy's celebrity presented a unique dilemma for employees: "How could we work with John every day,

forming a kind of family in the office—which was what John wanted, what he needed, to feel comfortable working with all these journalists—without getting so close that we lost our own identities?" Blow somehow managed to hang on to

**AMERICAN SON:
A PORTRAIT OF
JOHN F. KENNEDY, JR.**

by Richard Blow

Henry Holt, 294 pages
\$25.00

Bessette, a former fashion publicist, as a shopaholic injector of Botox, a young woman without much to do after leaving Calvin Klein's employ. And yet, he writes, "If you wandered into [the art director Matt Berman's] office while she was there, you never wanted to leave." Moreover, Carolyn had a certain influence: "She once nixed a cover with model Gabrielle Reece because, she told Matt Berman, Reece was passé." Most important, as an alumna of "middle-of-the-pack Boston University," this girl from Greenwich "provided John a link to the lives of ordinary Americans."

Two years ago Blow told *Brill's Content*—a magazine now as dead as *George*—that the Kennedy family was "not opposed to the writing of history, just the bad writing of history." Of course, what the Kennedys have always opposed is the writing of history that makes *them* look bad; but they have nothing to worry about here. *American Son* shows Blow to be exactly the sort of family retainer who has always



ing me of greed, opportunism, and bad intentions in general."

Some were especially angry because Blow, as *George's* executive editor, had punished staffers and contributors who talked to the press in the days and weeks after the 1999 plane crash that killed their boss. He now explains that he was protecting the magazine. Knowing that Caroline Kennedy Schlossberg, the inheritor of her brother's half share in the financially shaky publication, would be disgusted to hear *George* personnel talking publicly about John, Blow himself turned down requests for comment from David Remnick and even Barbara Walters—a resistance he presents as rather heroic. But with *George* long since gone, Blow argues that his book is a different

his while recording in a journal everything John Kennedy said, wore, and ate.

For all the secret scribbling and the anxiety about confidentiality (Blow's first publisher, Little, Brown, reportedly paid him a \$750,000 advance but canceled the book), the gossip value of *American Son* is pretty paltry. The volume is full of dud anecdotes (a rebuffed autograph seeker calls John an asshole), and its attempts at score-settling usually backfire: Blow doesn't seem to realize that in the vengeful little stories he tells about Andrew Sullivan and Core Vidal, for example, the joke's still on him.

Kennedy's high-maintenance wife, Carolyn Bessette, largely unknown and conveniently dead, passes in this book for a controversial character. Blow portrays

written "history" about (and sometimes even "by") family members. He includes just enough of his particular Kennedy's failings to show the subject's growth toward full self-awareness and noblesse oblige. Blow writes,

After four years of being startled, disappointed, moved, infuriated, puzzled, shocked, impressed, and educated by John Kennedy, I had come to respect this man. With *George*, John had made himself vulnerable, taken chances, made some mistakes, gotten lambasted in the press, and tried to accomplish something for his country—even as he labored to resolve his own identity questions.

Blow now believes that Kennedy would have gone on to the Senate, and won the presidency by 2012.

LOU BOPP

He does little, however, to convince readers of the just-quoted judgment, let alone its posthumous extrapolation. One has no trouble believing in John Kennedy's overall decency, but the author has a habit of making him appear most inane when he's being most strongly praised. (If *Blow* were a more artful writer, one might suspect him of a certain sly subversion.) He notes that JFK Jr.'s list of "American heroes" (for a *George* photo-essay) included Yogi Berra and General Shalikashvili; that Kennedy "fiercely advocated" putting Cindy Crawford on the cover of the premiere issue; and that his willingness to personally interview political figures was "a stroke of genius," because he would thereby be "self-publishing a psycho-biography in semimonthly installments" and reclaiming his life from the tabloids. Blow's mention of his boss's inability, at a White House correspondents' dinner, to understand how "Clinton could stand and crack jokes before the people who, come the next morning, would return to pry into his sex life" makes one doubt Kennedy's basic fitness to write or edit anything about politicians.

A typical issue of *George* couldn't sustain the reader's attention for a forty-minute shuttle flight between New York and Washington, but Blow tries hard to validate the magazine as a "postpartisan" (Kennedy's term) production that provided what Blow describes as "an intimate appreciation of American politicians, whom we respected but still called by their first names—as if they were family members." Blow explains his own suitability for this "profoundly democratic" enterprise by writing, "Even though I attended Yale and spent three years studying American history in a Harvard doctoral program, I had always felt a kinship with outsiders and the less-than-powerful." Alas, Blow continually equates democracy with stupidity, and intelligence with dullness. He also tries to turn every piece of goofiness into something purposeful: Kennedy's appearance on *Murphy Brown* signified "a moment when culture and politics were woven together in an inseparable dialectic." Blow doesn't have the slightest idea what the last word in that sentence means.

In another burst of unintended revelation, while discussing the Clinton sex scandals, he asserts that "the idea of covering politics as entertainment, without apologies, had spread like a virus since our debut." So in providing its "intimate appreciation" of politicians *George* was passing around a social disease. Perhaps it should have been shrink-wrapped.

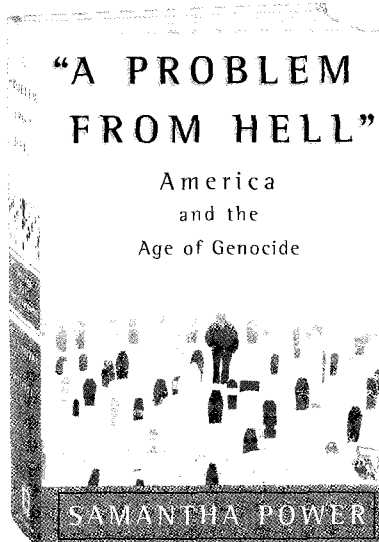
The magazine's underlying spirit was that of Kennedy's grandfather, Joseph P. Kennedy, who once pledged to sell his son "like soap flakes" to the American electorate. *George* tried to erase any remaining distance between politico and product. An article titled "Women of the C.O.P.," which Blow himself wrote, featured photos of its subjects in credited clothes: "Newt Gingrich media coordinator Leigh Ann Pusey (suit and shoes by Chanel, bag by Ferragamo)."

There was, Blow writes, "one question none of us wanted to ask: Were readers buying *George* because they liked the magazine or to get a glimpse of John?" Let me answer that question: to get a glimpse of John. *George* wasn't much different from *O* or *Rosie*, and its brief life was destined to end when its editor's did. But thanks to Blow's diary-keeping, history will not be denied a record of nearly every staffer's outfit on the first day of a *George* editorial retreat, an event chronicled as if it were the Dumbarton Oaks conference.

American Son is not so much a book as a TV-movie proposal. Its author is quite candid about its adaptive possibilities, and he has helped potential producers by eschewing the more subtle constructions of prose memoir in favor of what appears to be a ready-made "treatment." The scene openers are all in place—for example, Blow nervously checking the time before he escorts Kennedy to an interview with the president of the NRA ("Damn it, I thought, we're going to miss this flight"). The closers are here too, as in this last line of the job-offer scene: "I thought about it for four or five seconds. 'When do I start?'" The white space that follows on the printed page will soon become a Doritos commercial.

Blow includes a strategic amount of foreshadowing ("I took the train to

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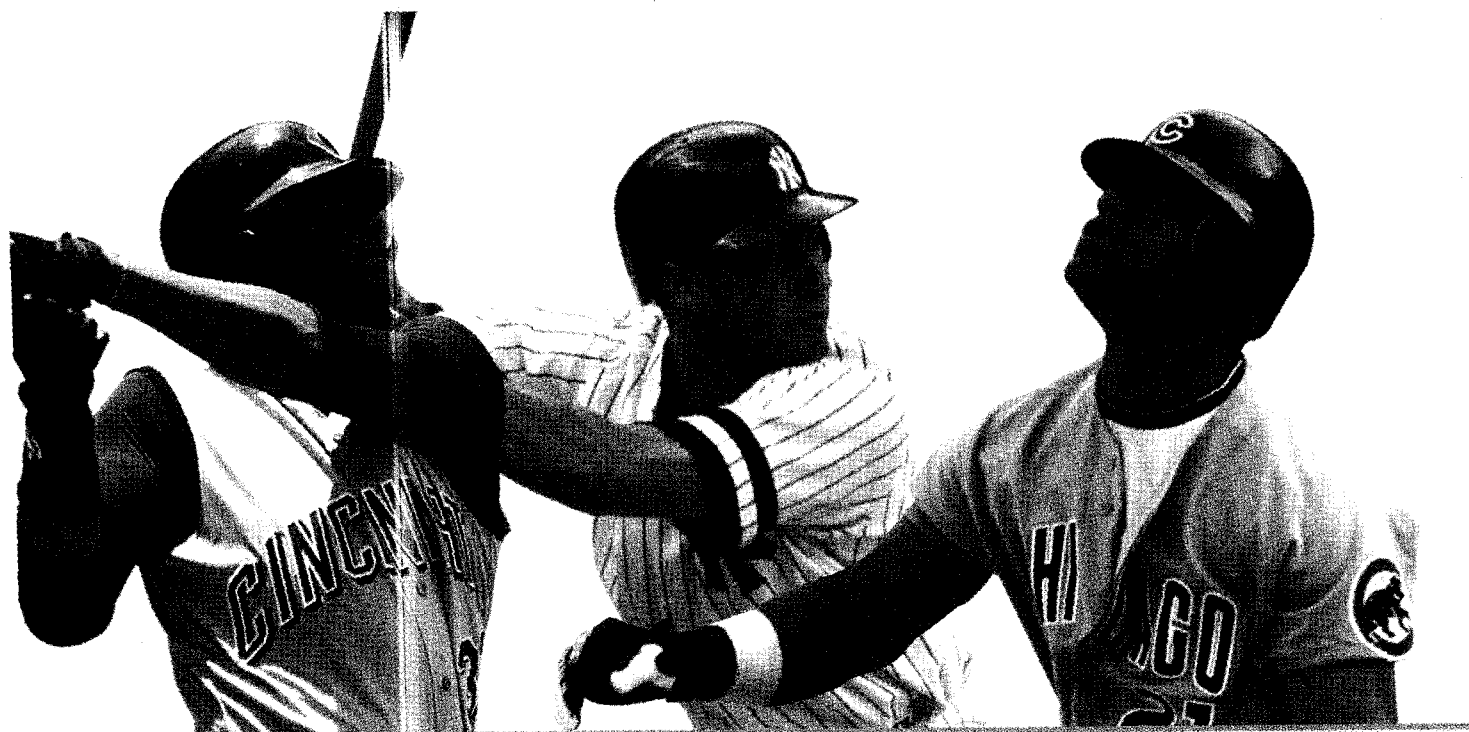
Connecticut to spend Christmas with my family. John traveled to Vero Beach, Florida, to commence flying lessons") in addition to notes for the costumer ("a dark blue tie and a white pocket square, an accoutrement he always wore on important occasions"). The prevailing tone is that of non-premium cable TV: the Lifetime network ("triumphs and tragedies") with an AMC dash of Frank Capra. "So what if we didn't have the insiders and the elites on our side?" Blow writes. "We had the people—or at least a lot of them." Blow even does what he can to pump some drama into the establishing shots ("Hachette's building, an ominous black and silver skyscraper ...").

The TV movie will work better than the book, because, except in the implausibly reconstructed dialogue, it will lack the print version's off-key, malaprop prose. This is a book in which confetti can bounce, monarchs become "monarchists," and metaphor is a kind of extreme sport: "We would need our strength because John was entering a year of intense and painful self-examination and he would pull us along with him, like a whaleboat crew tethered to a harpooned animal, bouncing along the choppy ocean toward the endless horizon." Attempts at aphorism only make things worse: "In New York City, you can always see celebrities, but you can never see stars."

Blow would like us to believe that when he took the job at *George*, he "wasn't that interested in celebrities." But he also tells us that the "high-powered real estate agent" who found him his New York apartment would one day "help Bill and Hillary Clinton buy a house in Chappaqua." And in recounting the night he and his girlfriend found themselves caught between JFK Jr. and the paparazzi, Blow winds up telling a story quite different from the one he intended.

Nyssa and I stood frozen, not knowing what to do but not wanting to abandon John. I instinctively grabbed Nyssa's hand, then, torn between protecting her and defending John, let go and tried to block the photographers.

The incident reveals a man who is above all desperate to get into the picture. (Nyssa eventually dumped him, and he went on to date a woman who had worked at, yes, Calvin Klein.)



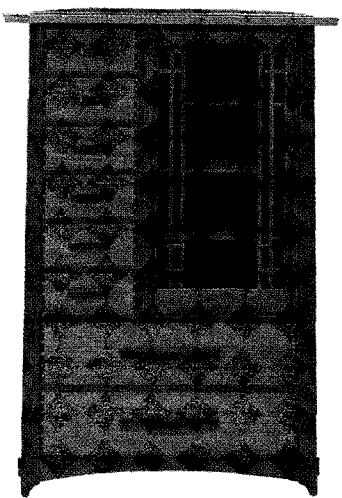
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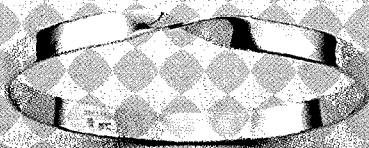
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Despite Blow's talk of "kinship with outsiders and the less-than-powerful," it seems pitifully obvious that he wanted to work at *George* for the same reason anybody cared to read it—to be around John Kennedy Jr. Recollecting a bit of touch football played during a winter snowfall, he writes, "Romp[ing] like a kid, I forgot that I was throwing a football around the streets of Manhattan with John F. Kennedy, Jr., substituting in a ritual he usually performed with his famous family." This is not, of course, what Blow "forgot"; it's what he most remembers. "I would respect and protect John," he recalls thinking in early 1996. "I would do my utmost to stand by him. But I would not be seduced by him." Well, we'll be the judge of that. Readers of whatever sex or orientation will enjoy this chastely homoerotic moment between author and hero.

"Here," John said. He reached out and took hold of the tie, smoothing out the creases. Then, his strong hands working the material expertly but gently, he slid the knot up so that it was snug in the center of my shirt collar.

Blow tries to dismantle the analogy he says people used to make between Kennedy and Jay Gatsby. "There was an essential difference between the two," he writes. "Gatsby knew who he wanted to be but denied who he was; John knew

who he was, but not who he wanted to be." Perhaps. What's more certain is that Blow saw an opening in the role of Nick Carraway. By 1999, he says, he was forced to contemplate his own demi-celebrity.

How much life had changed. Now I was the executive editor of a national magazine, appearing on television shows and speaking at press conferences ... And yet I had paid a price ... Was what I had gained worth what I had lost? ... Part of me wished I had never met John Kennedy.

Oh, but once Kennedy was gone:

The silence was unnatural; the city was never this silent. It felt wrong, like a movie without sound, a flower without color.

So this is how New York feels without John, I thought.

Nick Carraway confessed to a similar sensory disruption:

After Gatsby's death the East was haunted for me like that, distorted beyond my eyes' power of correction. So when the blue smoke of brittle leaves was in the air and the wind blew the wet laundry stiff on the line I decided to come back home.

Richard Blow is still in Manhattan, waiting—in vain, one suspects—for the second act in his American life. ▀

Thomas Mallon is a novelist and a critic. His most recent book is Mrs. Paine's Garage and the Murder of John F. Kennedy (2002).

BOOKS

WHAT PRICE VALOR?

Bravura displays of reproductive technology may shortchange the children

BY CAITLIN FLANAGAN

.....

Like many poorly argued books, *Creating a Life* is essentially review-proof. As soon as the author, Sylvia Ann Hewlett, begins to worry one of her weakly held positions long enough for the reviewer to take aim, she contradicts herself or flits off to the next harebrained idea. Case in point: still smarting over having been denied tenure at Barnard in the 1970s (when she was a young mother), Hewlett reports that a committee member informed

her she had "allowed childbearing to dilute [her] focus." But a scant eight pages back Hewlett had informed us that "what high-achieving women need are two things that are not yet readily available: reduced-hour jobs and careers that can be interrupted." In other words, they need to allow childbearing to dilute their focus. We might track down all the book's contradictions and try to make sense of them, but that way lies madness. Better

CREATING A LIFE: PROFESSIONAL WOMEN AND THE QUEST FOR CHILDREN

by Sylvia Ann Hewlett

Talk Miramax Books
334 pages, \$22.00

to get a bead on Hewlett's general topic of inquiry, the tendency of successful professional women to delay childbirth—because of the demands of “high-maintenance careers and needy partners”—for so long that even reproductive technology cannot help them. Hewlett seems to think that she is presenting shocking news on that front, and perhaps there are indeed legions of women who will be horrified to learn that the onset of perimenopause may not be the ideal time to start knitting booties and prying jogging strollers. To avert the risk of age-related infertility, the radical-minded Hewlett suggests—hold on to your hats!—that women ought to have children while they are still young, and the book contains enough accounts of failed fertility procedures to make this seem like wise counsel. Fair's fair: women of a certain age who seek fertility treatments endure enough misery—physical and emotional—that it was high time someone addressed the unpleasant truth head on.

But here's the curious thing about *Creating a Life*: the true heroes of the book turn out to be not those women who had their children early in the game but, rather, the few winners of the late-life fertility lottery, a remarkable band of “gutsy big-hearted women” who went for broke and managed to achieve pregnancies at near-biblical ages (Hewlett herself bore a child at fifty-one, but missed the Best in Show ribbon by a full twelve years). That there is something of the freak show to these achievements—at least one of the mothers made the pages of *The National Enquirer*—is almost certainly what attracted the attention of the book's excitable publisher, Talk Miramax. But more interesting than these bravura displays of reproductive ingenuity—the infants were created, variously, through donor sperm, donor eggs, a third-party uterus, and (perhaps most unexpectedly) good old-fashioned nooky—is Hewlett's attitude toward them. For example, the playwright Wendy Wasserstein's famous pregnancy seems to be the very model of what Hewlett warns against: it was preceded by seven years of medical treatment, severely compromised Wasserstein's health, and necessitated a lengthy maternal hospitalization and an

extremely premature cesarean delivery. The resulting baby girl weighed less than two pounds at birth and was hospitalized for ten weeks, during which she required a blood transfusion. But these miseries are presented not as cautionary tale but as triumph: Wasserstein was “remarkable and valiant” for never giving up the fight to become pregnant. Indeed, the most obvious question that such a pursuit prompts—whether it is in a child's best interest to have a mother who will be facing the challenges and travails of old age just as her offspring is entering adolescence—is never mentioned. Why? Because this is a book from the perspective of “high-achieving women,” and the main impression we get of the type is that they are going to get exactly what they want, and damn the expense or the human toll. These are women who have roared through the highest echelons of the country's blue-chip law firms, investment banks, and high tech companies. One interview was conducted over lunch at the Century Club, another in the “edgy and hip” offices of an IT firm; the relatively modest salary of a third woman almost disqualified her as a “high achiever,” but “she snuck in by virtue of her magna cum laude degree from Stanford University.”

Hewlett does her best to make us sympathetic toward such fiercely driven women, but the comments of a young male New Yorker—meant to reveal what cads high-achieving single *men* can be—backfire on her. He observes, “There's a whole bunch of them where I work. They're armed to the teeth with degrees—MBAs and the like—they're real aggressive, they love to take control, and they have this fierce hunger for success and for stuff. Everything they do and everything they want is expensive.” And when they want a baby (usually at an ill-considered age, because of what Hewlett calls “a society that continues to thrust cruel choices on women”), their approach is similar. Chinese orphanages present an inexhaustible—if clearly second-choice—source of product; much better to get your hands on a donor egg, although that presents “emotional challenges.” Emotional challenges to the child who must cope with his unusual conception? Of course not! The challenges are entirely the mother's, for “many

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FOR THE FIRST TIME, PERHAPS, A TENABLE HISTORY OF JESUS

It won't be found in the Bible. Critical examination of the New Testament Gospels reveal sloppy history, which gives a picture of Jesus more imaginative than factual. Most Christians seem not to notice or care—transcendentalism spins its own reality. But true realists, for whom historical accuracy matters, may be pleased with what the recently discovered *Gospel of Thomas* provides. It consists of 113 notes taken down by Thomas of perplexing things that Jesus said. Thus the notes were probably written down at the time heard and have not suffered alteration—the best kind of source for a history.

Jack Hannah in *You Will Not Taste Death: Jesus and Epicureanism* recognizes the notes as chronologically ordered and correlative with the skeletal history used in the *Gospel of Mark*. He provides all the text of the notes with comments and Marcan context, thereby developing a narrative of Jesus that is tenably historical.

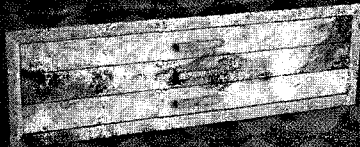
This *historical* Jesus based his teaching on the Epicurean philosophy, not on Judaism with its fasting, praying, almsgiving, and obeying food laws. Instead, this *historical* Jesus said, "Tell no lie and never do what you hate." This *historical* Jesus never mentioned a devil, demons, or hell.

The most radical difference, however, is that Epicureanism also shaped Jesus' thought that God and Caesar are man-made authorities, and that one's ultimate authority should be oneself. Hannah's book is 321 pgs., pbk., \$12 postpaid.

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women yearn for their own genetic child"

Hewlett presents a raft of solutions to the problems that she says have led to all of this—most concerning new government policies that would redraft employment law so that a woman can taste the fruits of ultimate professional success yet also get down to serious business between the sheets at an earlier age. In her advocacy for changes in the law, however, Hewlett merely reveals the central, heart-breaking flaw of the contemporary feminist movement—its elitism. "If employers were hit with overtime and fringe-benefit charges every time they squeezed an extra five or ten hours out of a professional employee, they might think twice about

requiring long workweeks." The key word here, of course, is "professional." For millions of working-class mothers (a majority of whom have been unhappily thrust into the labor market, owing—in large part—to the victories of the women's movement) overtime is something you do to pay the bills, not a disagreeable disruption to optimal "work/life balance." Perhaps the best assessment of the situation facing the "gutsy women" comes in the form of a wan remark by one of Hewlett's disillusioned interviewees: "It strikes me that in the real world grown-ups have hard choices." ▀

Caitlin Flanagan has written for The Atlantic on subjects ranging from wedding manuals to tabloids.

BOOKS

ELEGANT COMMON SENSE

H. L. Mencken's perfect marriage of style and substance

BY BENJAMIN SCHWARZ

.....

This exuberant collection of H. L. Mencken's reviews and short essays—most of them previously unassembled—will agitate, annoy, and thrill any thoughtful reader. Though the bulk of these literary pieces were written from 1910 to 1930, Mencken remains a breathtaking, beguiling critic, and—along with Edmund Wilson, probably Gore Vidal, and possibly John Updike—one of the few twentieth-century American men of letters whose reviews will be read throughout this century (as Mencken wrote of *Huckleberry Finn*) "not as a solemn duty, but for the honest love of it, and over and over again." Mencken could be exasperatingly wrong (see, for instance, his complete misreading of *The Age of Innocence*), but even then it is delightful to read so intelligent and honest a writer at work. Although this will (I hope) be the only occasion when these two figures find themselves in the same review, Theodor Adorno wrote that "luck and play" were essential to the essay, and Mencken's pieces gathered here bear this out. One can follow Mencken as he finds his way to his ideas, open-mindedly

but never tentatively, until the essays gel.

Mencken's views on the novel are so elegant and commonsensical that it's no wonder they've been ignored by the bulk of practitioners and critics: "What are the hallmarks of a competent writer of fiction?" he asked. "The first, it seems to me, is that he should be immensely interested in human beings, and have an eye sharp enough to see into them, and a hand clever enough to draw them as they are. The second is that he should be able to set them in imaginary situations which display the contents of their psyches effectively, and so carry his reader swiftly and pleasantly from point to point of what is called a good story."

Mencken attributed these qualities to Ring Lardner, and if for no other reason, this collection should be read for Mencken's advocacy and assessment of that author, who remains an underappreciated and (as Mencken prophesied) misunderstood American genius. Too often Lardner is relegated to the ranks of humorists, but a discerning reader will find in his work "satire of the most acid and appalling sort—satire wholly removed, like

H. L. MENCKEN ON AMERICAN LITERATURE

edited by S. T. Joshi
Ohio University Press
298 pages, \$44.95

Swift's before it, from the least weakness of amiability, or even pity." Mencken grasped that Lardner's achievement was "to take familiar personages, usually regarded with tolerant smiles, and to show the viciousness under their superficial imbecility." This seems a stark vision for a master of fiction, but as Mencken rightly argued (see, for instance, his review of *My Antonia*), a novelist's role isn't to provide uplift, impart lessons, explicate ideas, or advance causes. Mencken was above all a stylist; his writing—rollicking and exact—demonstrates more than any other American critic's a perfect conformity of style and ideas. And given that he is mistakenly, or at least simplistically, regarded as a champion of social realism, his pieces here (especially his assessments of F. Scott Fitzgerald and James Branch Cabell) stand out for their refreshing attention to aesthetics and for an old-fashioned devotion to formalism. As he wrote in his review of *The Great Gatsby*, "There are pages so artfully contrived that one can no more imagine improvising them than one can imagine improvising a fugue. They are full of little delicacies, charming turns of phrase, penetrating second thoughts. In other words, they are easy and excellent reading."

Being devoted exclusively to Mencken's criticism of American authors, this collection unavoidably gives the casual reader a distorted sense of his critical oeuvre. Mencken had an intense interest in and devotion to German literature and philosophy, and wrote astutely and at length about nearly every important English and European writer of his day. Moreover, the pieces in this book are in large part the briefest and most ephemeral of his critical work; he collected his most considered essays in *A Book of Prefaces* and in his six-volume series, *Prejudices*. And the 1968 collection *H. L. Mencken's Smart Set Criticism*, which contains primarily short reviews, gives the reader a better sense of his staggering range and curiosity. (Both volumes include Mencken's review of *Main Street*, which remains the best thing ever written about that book.) Nevertheless, there are few better primers of American literature—and there is no more penetrating evaluation of Lardner. ■

Benjamin Schwarz is a senior editor of The Atlantic.

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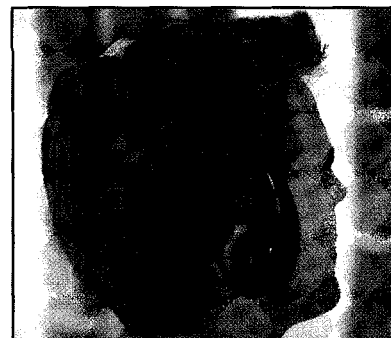
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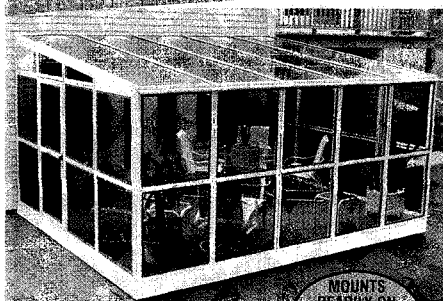
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BOOKS

NEW & NOTEWORTHY

*Fiction set in turn-of-the-century England and in the
Australian bush; ghosts in the darkroom*

....

On the face of it, Howard Norman's fifth book is a nice, comfy historical novel, set in one of those decades most conducive to period detail: the 1920s, with its hip flasks and streetcars and (relative) innocence. From the very beginning, however, the narrator lets us know that something is askew. Waking in the middle of the night, Peter Duvett—a photographer's assistant who happens to be sharing his bed with the photographer's wife—is stricken with an epistemological unease. "This was natural to my character," he tells us. "It occurred to me that hidden deep inside my sense of the world in perfect order was the fear that the worst was on its way." How right he is. It would be difficult to explain the specific catastrophe in his path, given the author's penchant for intricate plotting and loop-the-loop flashbacks. Suffice it to say that Peter's boss, Vienna Linn, is not only a serial murderer but also an artistic fraud who fakes the apparitions of departed spirits in his photographs—and that Peter's lover, Kala Murie, is a true believer in these very images.

In a sense, *The Haunting of L.* offers a protracted debate about the existence of the soul. But here, too, Norman refuses to play by simple rules. Kala, who's supposed to be batting for the spiritualist team, ultimately seems to view those spectral snapshots as little more than an index of familial dysfunction. Meanwhile, her vicious materialist of a husband is tormented—or let's say spooked—by the memory of his victims, most of whom he has successively killed and preserved on film. "You cannot begin to imagine, Duvett, what demons occupy my mind," he confesses, "and they each and every one have a mortal's name. Those many faces float in front of my eyes day and night.



**THE HAUNTING
OF L.**

by Howard
Norman

Farrar, Straus &
Giroux, 326 pages
\$24.00

They lay siege." And what of the meek and malleable narrator? Peter remains caught in the middle, unsure even of his own eccentricities. This makes him the exception in Norman's fictional universe, where everything—the plot, the prose, and the very names of the characters—is slightly but indelibly *strange*. There is considerable suspense here, and great depth of feeling, but it's the sheer, melancholic oddity of the book that will haunt most readers to the very end. —JAMES MARCUS

The simple plot of this novel—a woman and a man have conflicting goals, hers to preserve history by establishing a museum, his to institute progress by replacing a picturesque old bridge with a new concrete one—functions merely as a dummy on which the Australian novelist Kate Grenville drapes a gorgeous and intricate study of three characters. Two are engaging and wildly imperfect—Harley Savage, a textile artist three times married, who fears attachment and has therefore forced herself to become hard and unapproachable (yes, Harley might be a cliché—if she weren't so quirky and fully realized); and Douglas Cheeseman, a ridiculously awkward and excruciatingly self-conscious engineer who's terrified of heights. The third, Felicity Porcelline, is disturbingly inhuman in her obsession with perfection (to avoid developing wrinkles she smiles only when necessary). Harley and Douglas, used to hiding comfortably, if unsatisfyingly, from themselves in the anonymity of Sydney, find themselves exposed under the "big pale simple skin of sky" in a small town in the Australian bush, with happy results. It's an amusing and moving story of unlikely love, but one could read it just to marvel at Grenville's astounding writing.



**THE IDEA OF
PERFECTION**

by Kate Grenville

Viking, 401 pages
\$24.95

Whether probing her eccentric characters' doubts and anxieties or describing the hot, desolate landscape of the bush or capturing the way its inhabitants talk and think, her sentences—deceptively casual in their diction and rhythm—peg every moment with exquisite and surprising aptness. —CHRISTINA SCHWARZ

From its celebrated opening—"The past is a foreign country: they do things differently there"—a reader can deduce a great deal about the tone and theme of this 1953 novel, a recent reissue in the remarkable New York Review Books series. The narrative will be formal, even elegant (note that colon). Emotion will be recollected, perhaps in tranquillity, but certainly without moral judgment. Not least, however, that first sentence suggests the perplexity of a stranger in a place where people act in mysterious ways.

The story takes place in 1900, and is told fifty years later by the elderly Leo Colston, a lonesome man who has spent his life cataloguing books. The wheat fields glisten in the English sunshine and the temperature burns in the 80s and 90s when the nearly thirteen-year-old Leo is invited by a classmate to spend part of the summer at Brandham Hall. There, a poor boy among the wealthy, he is put at his ease by his friend Marcus's older sister, Marian, with whom he quietly falls in love. As the days go by, Leo comes to feel increasingly wary of the intimidating lady of the house, Mrs. Maudsley; to admire the kindly and easygoing Viscount Trimmingham, who was wounded in the Boer War; and to identify with a muscular young tenant farmer named Ted Burgess. Above all, he rejoices with almost pagan delight in the hot weather and the fertile landscape. Then, one afternoon, Ted Burgess cautiously asks Leo to take a letter—without telling anyone—to Marian. The reader, of course, guesses the truth immediately. But Leo does not. Slowly the sensitive boy finds himself increasingly confused by complex



THE
GO-BETWEEN
by L. P. Hartley
New York Review
Books, 339 pages
\$14.95

emotions and conflicting obligations. As he carries messages back and forth between the illicit lovers, the summer advances: croquet on the lawn, visits to the local church, the big Hall-versus-Town cricket match, a concert, roughhousing with Marcus, the prospect of a ball, the announcement of Marian's engagement to Trimmingham.

From the beginning we know that disaster awaits. But whom will it strike, and how? Methodically and inexorably Hartley's plot threads are all twisted together, pulled tight, tighter, and tighter still—until the tension makes everything snap. As a work of the highest formal artistry, *The Go-Between* must rank with Ford Madox Ford's *The Good Soldier*. And like that masterpiece, it is "the saddest story": "I kept my sense of the general drama of the match and it was sharpened by an awareness, which I couldn't have explained, of a peculiar drama between the bowler and the batsman, between Lord Trimmingham and Ted, who were now facing each other. Landlord and tenant, peer and commoner, Hall and village—these were elements in it. But there was another, the spot of bright colour on the pavilion steps which I knew was Marian."

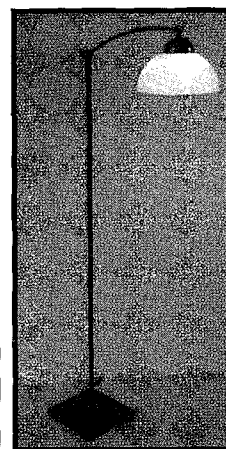
Absolutely limpid in its telling, *The Go-Between* movingly evokes the heavy fruitfulness of summer, the orderly country-house life of late Victorian England, and what Colm Tóibín, in his introduction to this reissue, calls the drama of "Leo's deeply sensuous nature moving blindly, in a world of rich detail and beautiful sentences, toward a destruction that is impelled by his own intensity of feeling, and, despite everything, his own innocence." —MICHAEL DIRDA

Recent books by Atlantic authors:

Mapping Human History: Discovering the Past Through Our Genes, by Steve Olson. Houghton Mifflin, 304 pages, \$25.00. A portion of this book first appeared in the April 2001 *Atlantic*, as "The Genetic Archaeology of Race."

Gracefully Insane: The Rise and Fall of America's Premier Mental Hospital, by Alex Beam. PublicAffairs, 288 pages, \$26.00. Portions of this book appeared in slightly different form as "The Mad Poets Society," in the July/August 2001 *Atlantic*.

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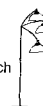


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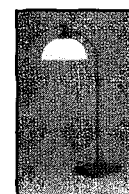
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BOOKS

THE NAZIS' LAST STAND

World War II's ferocious and surreal conclusion on the Eastern Front

BY NORMAN STONE

.....

We in the Western world equate the end of World War II with the Ardennes offensive—the Battle of the Bulge. Just before Christmas, 1944, in a thick fog that protected his tanks from Allied aircraft, Hitler gambled by launching a sudden counterattack in eastern Belgium, in difficult country, and brought off a tactical coup. His troops overwhelmed the surprised defenders, and it looked as if he would cut them off and reach the Allies' big supply port at Antwerp. But an American general famously said "Nuts" when called upon to surrender, and the fog lifted. The last German offensive in the West speedily crumbled, and from then on, though there was tough fighting in some places, the British and

the Americans were able in many others just to walk forward, accepting the surrender of hundreds of thousands of Germans who were grateful to be giving up to the Western powers and not to the Soviets. Anglo-American captivity was not

THE FALL OF BERLIN 1945

by Antony Beevor
Viking, 528 pages, \$29.95

comfortable, particularly in the first few weeks, but at least the prisoners (in the main) could survive. Soviet captivity was a different matter. Of the 90,000 men

who surrendered at Stalingrad in January of 1943, only 6,000 made it back to Germany, more than ten years later. The Soviets were not in a forgiving mood. *The Fall of Berlin 1945* makes this very—perhaps excessively—plain.

The final Western land campaign against Nazi Germany may have been

something of an anticlimax. But on the Eastern Front the war came to an end apocalyptically, and Antony Beevor, a veteran military historian, has a first-rate subject for his talents. To Central Europeans with a historical sense, it must have seemed as cataclysmic as the Mongol invasions, seven centuries before. Millions of Red Army soldiers, thousands of tanks and aircraft, had lined up on the River Vistula, which bisects Poland from north to south. On January 12, 1945, they struck, with great howls of artillery and multiple-rocket launchers—"Stalin Organs," the Germans called them. Already, the preceding summer, a whole German army group had been ground down by this massive weight, and the local commanders were desperate to be allowed to retreat, to show some flexibility in defense. Hitler, by now madly obstinate, told them that they must hold on; he even had generals shot for treachery and defeatism if they disobeyed. The outcome was foreseeable: the German defense disintegrated. One after another, supposed strong points became engulfed

in the Soviet flood, and one after another, Polish cities were liberated—Warsaw, a heap of ruins because the Germans had burned it in revenge for the Polish uprising of August 1944; Kraków, a Renaissance jewel of a town, which survived intact because the Soviets were too quick for any defense to operate. On January 27 came a melancholy capture: Auschwitz. Most of its surviving prisoners had been evacuated by the Nazis in a death march a week or two before, and were now moving, a column of pajama-clad scarecrows, toward concentration camps in Germany. By the time the Red Army had outrun its supply lines and needed to refit its tanks, it stood at the River Oder, at most fifty miles from Berlin.

An argument ensued. Should the army push straight on to Berlin, as its outstanding commander, Marshal G. K. Zhukov, wanted? With this there were problems, which Beevor outlines well. In the first place, Soviet generals were even more given to personal rivalry than Western generals, and some of them were not at all keen for Zhukov—by far, and justly, the best known and best respected of them—to achieve the renown for taking Berlin. Additionally, as ever in wartime, there were powerful arguments for prudence. Even as the German army was clearly on the run, the Soviets feared it. German soldiers remained formidable to the end, and as the Ardennes offensive had shown, they were quite capable of pulling surprises. The Soviets had advanced a long way from the Vistula, but fortified pockets of German troops remained—around Königsberg, the old Prussian capital, and Danzig, at the mouth of the Vistula; at Breslau, in Silesia, and the Hungarian capital, Budapest, where they were desperately withstanding a siege that was to last six weeks and to tie down R. Y. Malinovsky's army group. In Courland, in Latvia, a considerable contingent was still im pregnably fortified, and supplied by sea. Suppose that these forces all counterattacked simultaneously, with the "wonder weapons" that the Nazis were supposed to be producing: would this not spell a Soviet disaster? After all, in the early summer of 1942 Stalin had assumed that after his victory at Moscow, when the initial German onslaught had been

stopped, the way was open for a grand counterattack. Instead he had run into a trap, and had faced a triple defeat—in Kharkov, in the Crimea, and in Leningrad—that allowed the Germans to attack again, this time across the great plains of southern Russia. Much better, if Stalin did not want to risk a similar humiliation, to concentrate on reducing the pockets one by one. And so into early April the Red Army was kept busy with a kind of grinding, inch-by-inch frontal attack on fortified lines—an attack that no Western general, mindful of the need to keep casualties down, could possibly have ordered.

For the Germans this was by far the worst period of the war. They knew that when the Soviets arrived, there would very likely be an orgy of rape—old women, young girls, whoever. Beevor goes on and on about this. He has interviewed women who remember these horrors. The book has been rather badly received in some Russian quarters, because—at least in the captured cities, where officers could keep order—Red Army soldiers (as opposed to those in their wake, camp followers and former prisoners) were under some sort of control; and in any case, the previous German occupation of a large part of Russia and Ukraine had been distinguished by extraordinary cruelty and pillage. But there is no doubt that rape on a grand scale distinguished the Soviet advance through the countryside; and even before the end of the war Churchill was asking himself how he and the Americans could have let such "barbarians" into Europe. To the Soviets, however, the Germans had been the real barbarians, and Stalin was not going to let them forget it. Not until some days after the end of the war did it all stop—and then only because the Soviets needed at least some German cooperation.

The Nazis had forbidden anyone to retreat from eastern Germany. To stanch the Soviet invasion they even (grotesquely, as Beevor captures well) organized young boys and old men into a *Volkssturm* (typically pompous, untranslatable Nazi language; "enraged territorials" is probably close enough). Then, at the last moment, civilians were

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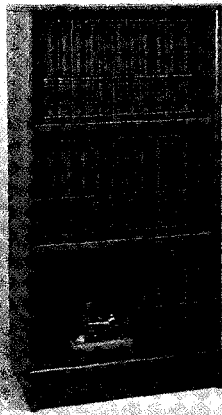
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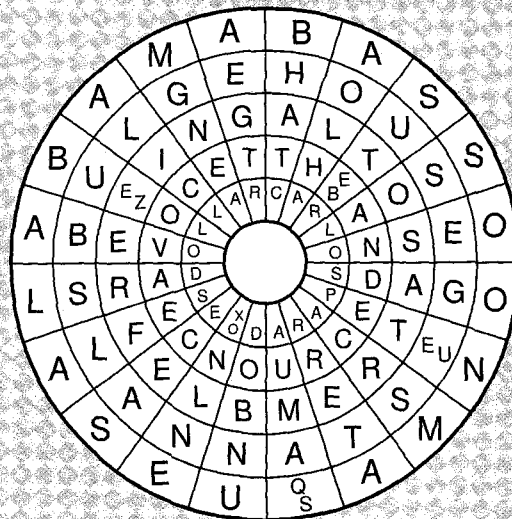
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allowed to flee. In the millions they did—column after column of horses and carts, laden with family valuables, sick old people, children, and pregnant women, plus a few able-bodied men who were trying to keep order. There was panic and death as the civilians were evacuated across the sandy spits of the Frisches Haff and in the *Wilhelm Gustloff*, which a Soviet sub sank in the freezing Baltic, with the loss of 7,000 lives.

Beevor may have missed an authorial trick or two here, because these treks, as they were called, profoundly marked the consciousness of the German people. He might have referred to Alexander Dohna-Schlobitten's classic *Erinnerungen eines alten Ostpreussen* (*Memoirs of an Old East Prussian*). A trek is difficult to describe, in that the same things happen again and again: wheels are lost; snowdrifts prove impassable; a road is unexpectedly blocked by Soviet cavalry; a baby is born prematurely after the mother's nighttime trudge through a blizzard toward the only light for miles around. Dohna-Schlobitten—a prince, with extremely interesting observations on the relations among the old aristocracy, the army, and the Nazis—managed to describe one trek, from deepest eastern Prussia to safety beyond the Elbe, in such a way as to keep the reader absorbed over about a hundred pages. The book was, unsurprisingly, a best seller in Germany, in part because so many Germans had been affected by such events.

When trekkers arrived in the vicinity of Berlin, they would see at night, on the horizon, a huge dull-red light, punctuated by blinding flashes: the Anglo-American bombing of their capital, which in the end reduced much of the place to a lunar landscape. The railway stations of Berlin were crammed with refugees, who spilled over into the underground railway tunnels. Unfortunately, Beevor is too much the military man to spend time on civilian life. That is a pity, because its fantastic incongruities might have varied the pace somewhat. Amid all the chaos the Hotel Adlon was still functioning, its waiters in white gloves and tails serving the diplomatic corps—the Irish minister, the Croat minister (a competent novelist), the

ANSWERS TO THE MAY PUZZLER



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Vichy French minister in exile, members of the poor Japanese mission. In the railway tunnels stalwarts of the foreign volunteer SS (including even a few British) strutted their stuff, expecting Soviets any minute to come around the next bend. The Frenchman Louis-Ferdinand Céline managed to evoke this kind of black surrealism with *Nord*, and the Italian Curzio Malaparte conveyed a similar mixture of ribaldry, evil, and pettiness, with the same gusto, in *Kaputt*. No German has ever brought off a similar literary feat.

When the Soviets had finally wiped out the pockets (it took them weeks), they assembled their forces on the Oder and readied them for a full-scale strike directly at Berlin. It was the middle of April, and by then Hitler's defenses had been largely neutralized. Since the autumn of 1944 it had been possible for the Americans, especially, to conduct daylight pinpoint bombing raids on fuel installations and transport lines. (The innovation of aluminum-and-wood fighters, light and fuel-efficient, and therefore able to protect heavy bombers on long-range missions, was unmatched elsewhere.) And this advantage in the air was passed along to the ground troops, because the German defenders were almost immobilized for lack of fuel. German-made jet fighters might have worked wonders in the air, but fuel was so short that they had to be towed to the airfields by oxen, and most were destroyed on the ground in Munich. Hitler could rant and rave from his underground headquarters, could stage his daily situation conferences with all the airs of a Napoleon at Austerlitz; but the troops he ordered to do this or that were basically left without the means to move, and thus could not mount a coordinated defense. They could only wait for the Soviets.

And the Soviets arrived, beginning in mid-April. Many others have written on this subject. Cornelius Ryan (*The Last Battle*) was very good, and the late John Erickson (*The Road to Berlin*), who has done more for the study of the Soviet military than anyone else, was outstanding. Beevor's specialty here is disentangling the street fighting (as it was in his

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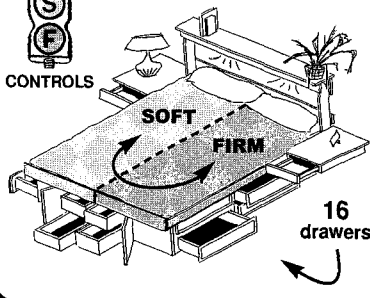
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book *Stalingrad*). Street fighting, like the treks, is in many ways just the same thing happening again and again. But here we have a sense of the Soviets moving in (the book could do with a proper map of central Berlin) as they fought over those parts of the city that the world would come to know so well in Cold War days—Zoo, Friedrichstrasse, Unter den Linden, Vossstrasse, Siegesallee. The Germans fought to the death rather than surrender. (Beevor offers a very British-army aside when he says that British officers regarded the war as a good fight against a reasonably sporting enemy.) In the midst of it all, in a two-story concrete structure deep beneath the garden of the severely neoclassical Reich Chancellery that Albert Speer had built for him, sat Adolf Hitler.

It is a pity that Beevor lacks a sense of the surreal, because Hitler's end almost gives the word new meaning. The Führer would have liked to perish heroically, by his own hand, in the middle of a twilight of the gods. Instead there was a persistent ridiculousness about his last weeks, and it worked up to a climax. The Russians have still not revealed the goods the Soviet archives must surely have on this; we know some of the story, but not all. Buoyed by some kind of insane determination, Hitler neglected every opportunity to surrender to whichever of the Allies might have received him most sympathetically. The situation conferences went on; the black-clad figures clicked their heels; on occasion Wagner or Bruckner was played. (When Hitler committed suicide, the Reich Chancellery staff, with huge relief, raided the wine cellar and put on jazz records; some staff members were dancing tipsily when the Soviets burst in.)

Meanwhile, battalions gave way, and the Soviets advanced relentlessly until they were fighting on several stories of the old Prussian Finance Ministry, down the street. At that point Hitler staged his wedding, of all things, made

polite conversation with the witnesses, and, the next day, gobbled down a vegetarian lunch and shot himself while the bride munched cyanide.

Desperate that his body not be defiled, Hitler had given orders for it to be burned. Seven faithful worthies trudged up the steps of the underground shelter, lugging the corpses of Mr. and Mrs. Hitler in Wehrmacht blankets. The bodies were laid in the garden and drenched with petrol that had been brought from the emergency reserve of the chancellery garage; then matches were lit. But nearby shelling temporarily reduced the oxygen in the air, and the flames went out. One of the group produced the sort of paper spill with which one lights a pipe, and Martin Bormann, Hitler's deputy, applied a match. The spill flew through the air like a paper dart and found enough oxygen to ignite the corpses, and the party returned downstairs. (There they lit cigarettes, the smell of which, through the ventilator shafts, alerted others in the bunker to the Führer's death, because he had been fanatically anti-smoking to the end.)

But the would-be cremators had not realized that cremation requires a draft of air beneath the body. Hitler and Eva Braun burned superficially, and then the flames went out again. The bodies were identified for the Soviets by one of their captives, and autopsies were performed. Then the Soviets mysteriously denied that they had the bodies after all, and suggested that Hitler might have escaped somewhere. Why did they do this? We still do not know. In any event, the Soviets jumbled post-autopsy bits of Hitler's body among the bits and pieces of several other bodies, including possibly his dog's, and the Third Reich ended with, ironically enough, an inefficient cremation. It is a theme for Céline. ▀

Norman Stone is the director of the Turco-Russian Centre at Bilkent University, in Ankara, and a former Professor of Modern History at Oxford. His books include The Eastern Front 1914–1917 (1975) and the forthcoming The Atlantic Revival 1971–1991.

The Atlantic Monthly (ISSN 1072-7825) is published monthly except for a combined issue in July/August by The Atlantic Monthly Group, 77 N. Washington St., Boston, MA 02114 (617-854-7700). Periodicals postage paid at Boston, MA, Toronto, Ont., and additional mailing offices. Printed in U.S.A. Subscription queries: Atlantic Customer Care, Box 37585, Boone, IA 50037-0585 (or call 800-234-2411). Privacy: We make portions of our customer list available to carefully screened companies that offer products and services we believe you may enjoy. If you do not want to receive this information, please write to the Customer Care address above. Advertising and Circulation: 200 Madison Ave., 20th floor, NY, NY 10016 (646-695-8500). Subscriptions: one year \$19.95 in the U.S. and poss.; add \$8.00 in Canada, includes GST (123209926); add \$15.00 elsewhere. Canada Post Publications Mail Agreement 0261327. Back issues: send \$7.50 per copy to The Atlantic, Back Issues, 1900 Industrial Park Dr., Federalburg, MD 21632 (or call 410-754-8219). Vol. 289, No. 6, June 2002. Copyright © 2002, by The Atlantic Monthly Group. All rights reserved. Postmaster: Send address changes to Atlantic Address Change, Box 37585, Boone, IA 50037-0585.



THE PUZZLER

by EMILY COX and HENRY RATHVON

Layers

This puzzle is a triple-layered affair. Entries from Layer 1, the outermost, provide the clues for Layer 2, and letters from the second layer form the clue leading to the entry for Layer 3. Clues for Layer 2 are given in order, Acrosses from top to bottom and Downs from left to right. Clue answers include four proper nouns, one of them in the second layer.

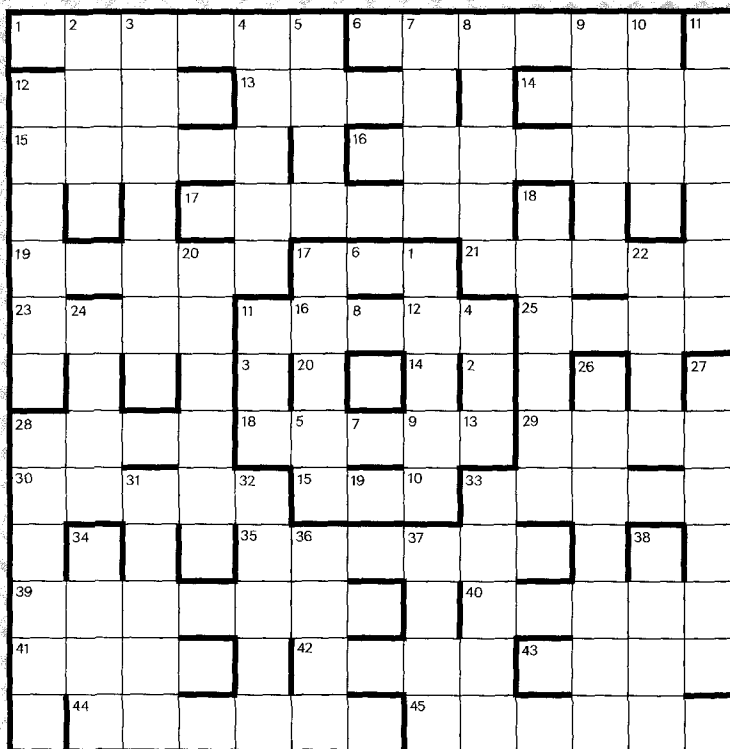
Last month's Puzzler solution is on page 116.

LAYER 1 ACROSS

1. Turning fifty, gets bent in lounge (6)
6. Colorful fish treats scattered around (6)
12. View world's conclusion and origin (4)
13. Honest noble losing heart (4)
14. Be indebted to sweetheart for auditioning instrument (4)
15. Absorbed by gripping read's opening preface (5)
16. Norma's busted accepting small payments for criminals (7)
17. Close until losing start (6)
19. Person popular in press (5)
21. Record held by Ellen Terry (5)
23. Expert stocks nitrogen for skin condition (4)
25. Great for all ages to watch in color (4)
28. Out of favor, at first memory (4)
29. Not as much belonging to Paul, the guitarist (4)
30. Map feature with three compass points in it (5)
33. Teaching English in simple shelter (5)
35. After opening, Ben is eating passable mushrooms (6)
39. Observed consuming a drink in Michigan town (7)
40. Sondheim's ultimate song? (5)
41. Faithful last to admit regret (4)
42. Guy in capital of the Maldives (4)
43. Oddly chintzy town (4)
44. Source of the equipment for fencing in modest dwellings (6)
45. Crazy passage of tipsy choreographer (6)

LAYER 3

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20



LAYER 1 DOWN

2. Swan's quills (4)
3. Keeps teacher's aide in control (7)
4. Criminal grown reformed (5)
5. Bullets appear in front (4)
7. Dash through "Wasteland" (4)
8. Suggestion to loveless playwright (5)
9. Regarding a match (5)
10. Recited full amount, roughly (4)
11. Engineer's in urgent want (6)
12. Doubly evil sailor (6)
18. One well trapping northern wolf (6)
20. Tennis players gain notice, finally, in Minnesota (6)
22. Selfish types engaged in idle gossip (4)
24. Resistance on board against trite material (4)
26. Common novel in Greece abridged (7)
27. A street light off route (6)
28. Earl picked up by duke before a celebration (6)

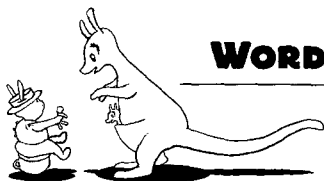
31. Bridge, for instance, covered by petition (5)
32. Rigid category in grammar (5)
33. By Monday, invested in bonds (5)
34. Measure average temperature (4)
36. Designate certain paint "interior only" (4)
37. Mess-hall helper collecting the Spanish seaweed (4)
38. Having intelligence and aspiration (4)

LAYER 2 ACROSS

- a. 34D 38D 10D 13A 22D (3)
- b. 2D 15A 28A 43A 33D (5)
- c. 19A 45A, 21A (5)
- d. 4D 30A 38D 42A 36D (3)

LAYER 2 DOWN

- a. 10D 24D 28A 26D 14A 34D (3)
- b. 13A 4D 9D 33D 19A 29A 32D (5)
- c. 8D 27D, 21A (3,2)
- d. 42A 12A 38D 41A 36D (3)



WORD FUGITIVES

by BARBARA WALLRAFF

Dispute erupted in the Word Fugitives mailbag regarding an appropriate tenor for “a word for people who send e-mail messages and then follow them up saying, ‘Did you get my e-mail message?’”—one of the word fugitives sought in February.

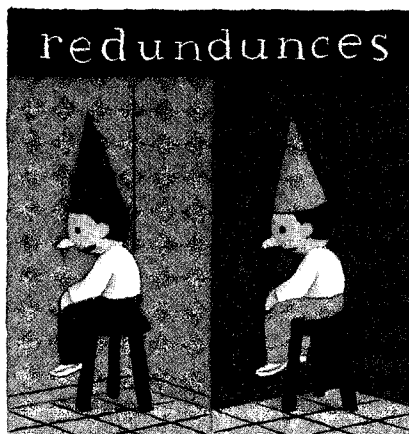
“I take issue with the blatant attack on those of us who send follow-up e-mails,” wrote Andrew Goldberg, of New York City. Cheryl Scott Ryan, of Austin, Texas, wrote, “Our recent office move has not been kind to our outgoing e-mail, so I feel a need to make sure all my e-mails make it to their intended recipients.” Ryan, among many others, proposed the bias-free term *re-mailers* to describe people like her.

Suzanne Lanoue, of Tuscaloosa, Alabama, advised, “They may be doing it for a good reason, such as that it is an important matter to them and you didn’t answer them in good time.” She continued, “How about a word for people who never read their e-mail? Or a word for people who never answer it? And what about for those self-centered people who reply to your e-mail but don’t answer any of your questions or don’t make comments about anything you said?”

Other readers, however, heaped scorn on the e-mailers who follow up, suggesting such unflattering terms as *cybores* (coined by Marjory Wunsch, of Cambridge, Massachusetts), *confirmaniacs* (Sheridan Manasen, of Kennebunk, Maine), *memorons* (Phil Ruder, of Forest Grove, Oregon), and *e-diots* (proposed by several people). Mitchell Burnside Clapp, of Los Olivos, California, wrote, “I suggest *NetWit*, with the irregular capitalization appropriate to the computer age. I think a hideous neologism is needed to describe the hideous reality.”

John G. Keresty, of Vernon, New Jersey, shared an observation about a similar behavior in a different realm. He wrote, “Years ago I was in the sports-

writing business, and I found that every coach of any sport at any level would repeat short instructions or exhortations thus: ‘Let’s go get ‘em, let’s go get ‘em’; ‘Good job, Keresty, good job’; ‘Hey, ref, hey, ref! Are you blind? Are you blind?’ and so on, and so on. So for the quest for a word for e-mail follow-uppers, I give you the one I coined for all the double-speak coaches: *redundunces*.” For making the connection and cleverly adapting his coinage (one also submitted by other readers), Keresty takes top honors. Keresty takes top honors.



P.S. To all those readers who sent follow-up e-mails or letters cheekily asking whether we’d received your first communications, Yes, we did, thanks!

The other word fugitive sought in February was one “for those periods in which every little thing that can go wrong does.” The responses were rife with references to Murphy’s Law (usually stated as “Anything that can go wrong will,” though sometimes expressed in terms of the inevitability that falling toast will land buttered side down). *Murph*, *murphase*, and *Murphy moment* were among the many suggestions received.

J. Robert Lennon, of Ithaca, New York, came up with *chagrinterval*; Charles Memminger, of Honolulu, *fluster cluster*;

Connie West, of Cincinnati, *awry spell*, and Cina Loebell, of East Windsor, New Jersey, *bad err day*. Two people suggested *erra*, and two others *dayzaster*. Ian Kinsley, of Sioux Falls, South Dakota, came up with an entire week’s worth of possibilities: “*Mournday, Bluesday, Winceday, Curseday, Frightday*, and, of course, *the Bleakend*.” Jennifer Lewis, of New Orleans, wrote, “A natural-born klutz, I tend to regularly experience the phenomenon described. Sometimes my life seems one big, bumbling *calamitime*.”

But perhaps the most productive line of thought was *karma* combinations. For instance, Chris Nauyokas, of Chicago, suggested *karmageddon*. And taking top honors is Miko Dworkin, of Calgary, Alberta, for her right-on-target neologism *karmaclysm*.

Now MIKE DAVIS, of Albuquerque, New Mexico, writes, “We have so many verbs to describe the things we do with our faces: *smile, smirk, frown*, etc. Is there a verb to describe the raising of the eyebrows and turning down of the mouth to signify that one is impressed?”

And SCOTT BUFFETT, of Bedford, New Hampshire, writes, “If language organizes experience, then please give me a word or phrase for the frantic period of time many families experience each morning prior to leaving home.”

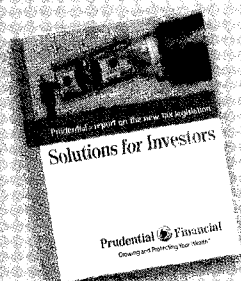
Send words that meet Mike Davis’s or Scott Buffett’s needs to *Word Fugitives*, The Atlantic Monthly, 77 North Washington Street, Boston, MA 02114, or visit the *Word Fugitives* page on our Web site, at www.theatlantic.com/fugitives. Submissions must be received by June 30. Use the same addresses to submit word fugitives that you’d like The Atlantic’s help in finding. Letters become the property of *Word Fugitives* and may be edited.

Readers whose queries are published and those whose words are singled out for top honors will each receive, with our thanks, a selection of recent autographed books by Atlantic authors. The next installment’s correspondents will be sent *Warrior Politics*, by Robert D. Kaplan; *The CEO of the Sofa*, by P.J. O’Rourke; and “A Problem From Hell,” by Samantha Power.

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